

B-275 Tractor

Operators Manual

1026273R6

Reprinted





This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

SB001

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW.

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.



WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE, CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE.

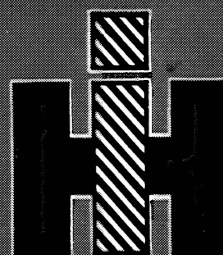
It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Case dealer for additional operator's manuals, parts catalogs, and service manuals.

OPERATOR'S MANUAL

McCORMICK INTERNATIONAL B-275 TRACTOR

DIESEL AND PETROL MODELS



**INTERNATIONAL
HARVESTER**

TO THE OWNER

By selecting an International Harvester tractor as your new power partner, you have purchased a product of one of the world's foremost manufacturers of farm equipment. We feel sure you will obtain from this machine the economical and superior performance it is designed to give. It is certain that you will derive a large measure of personal satisfaction from operating it.

Years of tractor manufacturing experience and actual contact with agricultural problems in the field have been combined with advancements in engineering and metallurgical science to produce all the features and refinements built into your tractor. The liberal use of precision-type bearings, the heavy-duty crankshaft, force-feed lubrication, extra-large flywheel and the efficient air, oil and fuel cleaners are some of the features that give your tractor its eager power to do all your power jobs with thoroughness, speed and economy. Properly adjusted, operated and maintained, this tractor will respond to every reasonable demand you make upon it and give you reliable service for years to come.

WARRANTY PERIOD

The Notes contained in this Operator's Manual for proprietary items, such as electrical and fuel injection equipment, have been compiled for use after the warranty period has expired. If attention, however small, is required to any of these items whilst they are still within the warranty period, your International Harvester Dealer should be informed.

AM

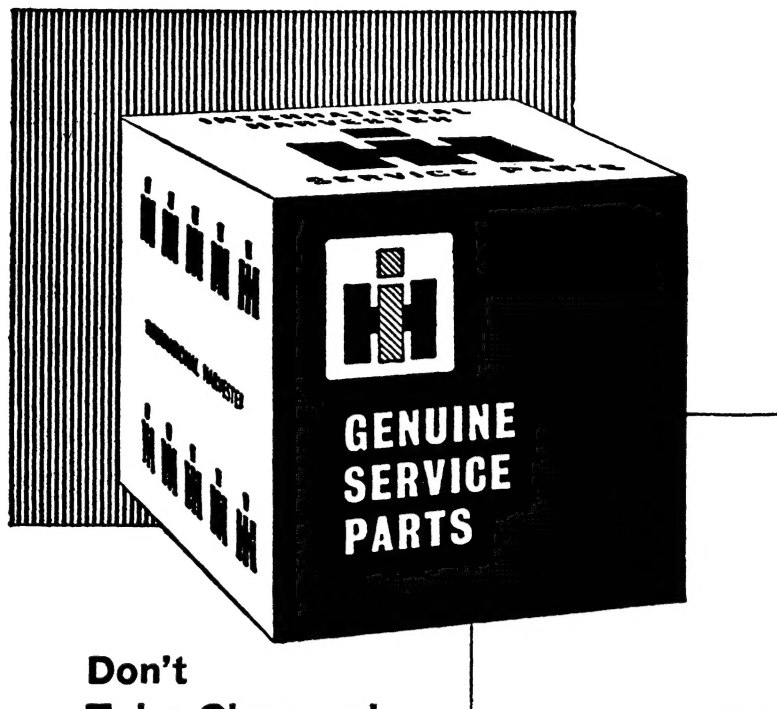
**Accidents
can be
prevented
with
your
help**

To read accident reports from all over the country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. If accidents are to be prevented—and they can be prevented—it will be done by the operators who accept a full measure of their responsibility.

It is true that the designer, the manufacturer, the safety engineer can help; and they do help, but their combined efforts can be wiped out by a single careless act of the operator.

It is said that “the best kind of safety device is a careful operator.” We ask **you** to be that kind of operator.

SAFETY FIRST



**Don't
Take Chances!
Insist on
Genuine Replacement Parts**

Satisfactory and efficient service in the operation of any machine is endangered by the use of inferior parts, as cheap parts invariably mean short life and high cost.

If parts could be manufactured at a lower cost and sold at lower prices without sacrificing quality, this would be done. The right material for the purpose and the knowledge acquired through many years of manufacturing enables International Harvester to produce quality that will not be found in "might fit" parts.



INTERNATIONAL HARVESTER
COMPANY OF GREAT BRITAIN LIMITED
259 CITY ROAD · LONDON · E.C. 1

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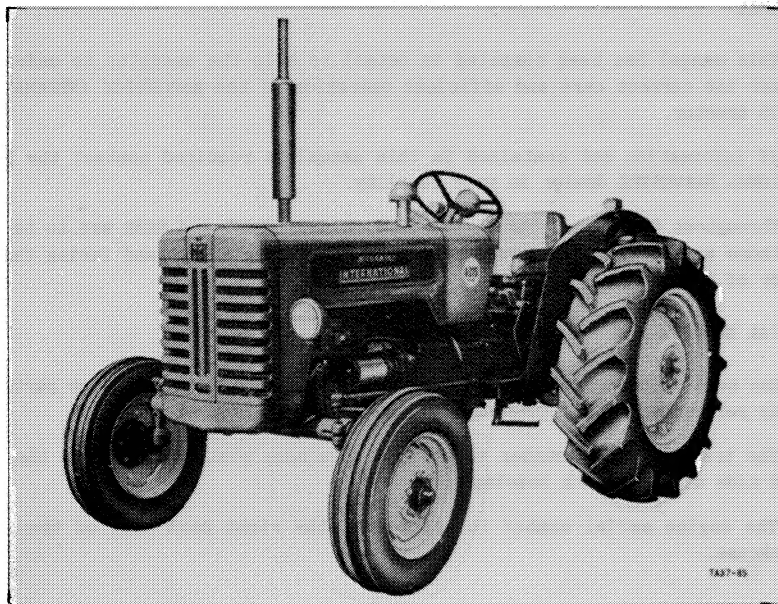
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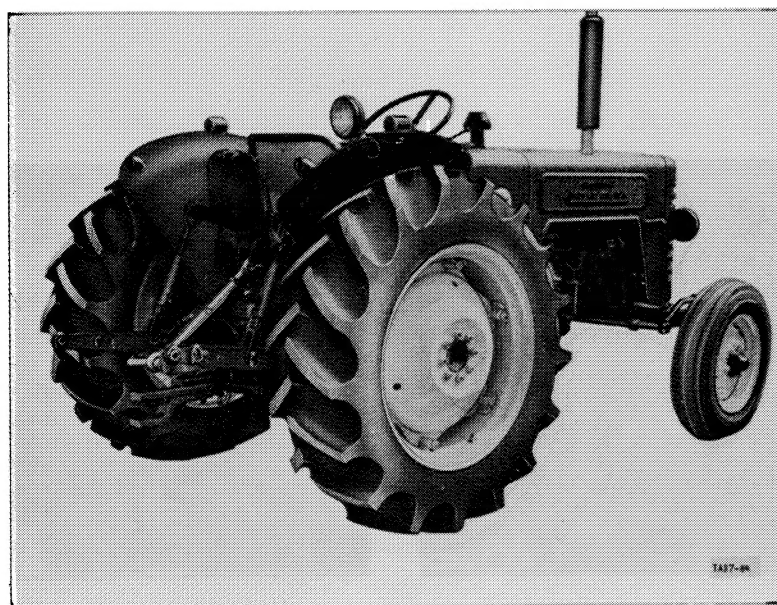
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DESCRIPTION



Illust.1 Left Hand Front View of the B-275 Tractor



Illust.2 Right Hand Rear View of the B-275 Tractor

INTRODUCTION

GENERAL

This manual has been compiled in detail to help the operator to understand better the correct care and efficient operation of the McCORMICK INTERNATIONAL B-275 tractor.

If information not contained in this manual is required contact the INTERNATIONAL HARVESTER dealer in your locality.

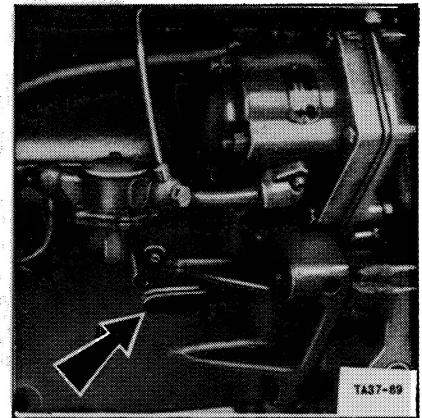
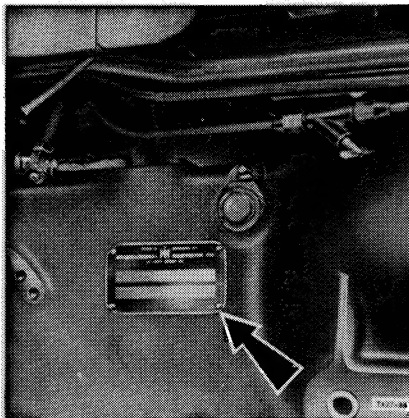
Throughout the manual the terms, LEFT, RIGHT, FRONT and REAR are to be taken as those applicable to a person seated in the driver's seat and facing the radiator of the machine.

SERIAL NUMBERS

Use serial numbers when requesting information or ordering service parts. For ready reference, record these serial numbers in the spaces provided.

The tractor serial number is stamped on a name plate attached to the right hand side of the clutch housing.

The engine serial number is stamped on the right hand side of the engine crankcase.



Illust.3 Tractor Serial Number Location Illust.4 Engine Serial Number Location

S P E C I F I C A T I O N S

ENGINE

Diesel

Make	...	...	...	...	...	...	...	I.H.
Model	...	...	...	...	...	...	...	BD-144
No. of cylinders	...	...	...	...	...	...	...	4
Bore in. (mm)	...	...	...	...	...	...	3-3/8	(85.75)
Stroke in. (mm)	...	...	...	...	...	...	4	(101.6)
Displacement cu in. (cc)	...	...	...	...	...	...	144	(2249.7)
Valve clearance (HOT) in. (mm)	...	...	...	...	...	...	.020	(.508)
Firing order	...	...	...	...	...	...	...	1-3-4-2
Low idle rev/min	...	...	...	...	...	...	...	520-580
High idle (No Load) rev/min	...	...	...	...	...	...	...	1925

Petrol

Make	...	...	...	...	...	...	...	I.H.
Model	...	...	...	...	...	...	...	BC-144
No. of cylinders	...	...	...	...	...	...	...	4
Bore in. (mm)	...	...	...	...	...	...	3-3/8	(85.75)
Stroke in. (mm)	...	...	...	...	...	...	4	(101.6)
Displacement cu in. (cc)	...	...	...	...	...	...	144	(2249.7)
Valve clearance (HOT) in. (mm)	...	...	...	...	...	...	.020	(.508)
Firing order	...	...	...	...	...	...	...	1-3-4-2
Low idle rev/min	...	...	...	...	...	...	...	500
High idle (No Load) rev/min	...	...	...	...	...	...	...	2075
Spark plug gap in. (mm)	...	...	...	...	...	...	.024	(.610)
Distributor point gap in. (mm)	...	...	...	...	...	...	.014	(.356)

SPECIFICATIONS

TRACTOR SPEEDS At rated speed on:	REGULAR				HI-CLEAR	
	10.00-28 tyres		11.00-28 tyres		11.00-38 tyres	
	MPH	KPH	MPH	KPH	MPH	KPH
L1	1.49	2.4	1.6	2.5	1.89	3.02
L2	2.37	3.8	2.5	4.0	3.01	4.82
L3	3.37	5.4	3.5	5.7	4.28	6.85
H1	4.01	6.5	4.2	6.7	5.09	8.14
L4	5.05	8.1	5.3	8.5	6.41	10.26
H2	6.36	10.2	6.6	10.7	8.07	12.91
H3	9.06	14.6	9.4	15.2	11.50	18.40
H4 *	14.4	23.0	15.0	24.0	17.18	27.49
LOW REVERSE	2.25	3.6	2.3	3.8	2.86	4.58
HIGH REVERSE	6.05	9.7	6.3	10.1	7.68	12.29

* Speed at 2000 rpm being speed obtainable on No Load road work

TYRE SIZE (Standard)				REGULAR		HI-CLEAR	
FRONT	...	...	...	4.00-19	4 ply	4.00-19	4 ply
REAR	...	...	...	10.00-28	4 ply	11.00-38	4 ply

TYRE PRESSURES

On the highway							
FRONT	lb/in ²	(kg/cm ²)	...	...	...	...	28 (1.97)
REAR	lb/in ²	(kg/cm ²)	...	...	...	...	16 (1.125)
In the field							
FRONT	lb/in ²	(kg/cm ²)	...	...	...	...	20 (1.405)
REAR	lb/in ²	(kg/cm ²)	...	...	...	...	12 (0.843)

COOLANT SYSTEM

Operating pressure	lb/in ²	(kg/cm ²)	7 (0.492)
--------------------	--------------------	-----------------------	-----	-----	-----	-----------

CAPACITIES

Cooling system	pints (litres)	...	...	...	...	18 (10.23)
Fuel tank	pints (litres)	...	...	...	...	68 (38.6)
Crankcase oil pan PETROL	pints (litres)	...	...	...	...	9 (5.13)
Crankcase oil pan DIESEL	pints (litres)	...	...	...	...	13 (7.9)
Air cleaner cup	pints (litres)	...	...	...	...	1 (0.37)
Transmission case	pints (litres)	...	...	...	...	32 (18.18)
Transmission case with P.T.O.	pints (litres)	...	...	...	...	38 (21.58)
Hydraulic reservoir	pints (litres)	...	...	...	...	20 (11.4)

SPECIAL BOLT TORQUES

Cylinder head nuts	lb ft (kgm)	...	...	...	75-80 (10.04-11.06)
Rear wheel hub nuts	lb ft (kgm)	...	...	...	200 (27.6)
Rear wheel rim nuts	lb ft (kgm)	...	...	...	110-115 (15.2-15.9)
Hi-clear rear wheel rim nuts	lb ft (kgm)	...	...	...	40-50 (5.53-6.91)
Front wheel hub nuts	lb ft (kgm)	...	...	...	50 (6.91)
Front axle clamp bolts	lb ft (kgm)	...	...	...	250-280 (34.6-38.7)
Clutch pedal pinch bolts	lb ft (kgm)	...	...	...	35-40 (4.83-5.53)

SPECIFICATIONS

GENERAL DIMENSIONS

Regular

Length overall

less lower links and drawbar in. (cm) ... 112 (284.5)

Tread

FRONT (in 4in. (10.16cm) stages) in. (cm) ... 48 to 76 (121.9 to 193)

REAR (in 4in. (10.16cm) stages) in. (cm) ... 48 to 76 (121.9 to 193)

Width overall

Front wheels in. (cm) ... 59 to 87 (149.9 to 221.0)

Rear wheels in. (cm) ... 63-3/4 to 87-3/4 (161.9 to 222.9)

Wheelbase in. (cm) ... 74-1/6 (188.3)

Height to top of steering wheel in. (cm) ... 59-3/16 (150.3)

Ground clearance

Under rear frame in. (cm) ... 15-5/8 (39.7)

Under front axle in. (cm) ... 18-1/2 (47)

Turning radius (at min.setting) in. (cm)

Without brakes ... 132 (335.3)

With brakes ... 123 (312.4)

Lift at end of lower links with links horizontal lb (kg) ... 2600 (1180)

Operating weight (approx.) lb (kg)

including fuel, oil, water, hydraulic system with three
point linkage, standard P.T.O. and lighting 3460 (1569)

SPECIFICATIONS

GENERAL DIMENSIONS

Hi-Clear

Length overall

less lower links and drawbar	in. (cm)...	118-3/4	(298.8)
------------------------------	-------------	-----	-----	---------	---------

Tread

FRONT (in 4in.(10.16cm) stages)	in. (cm)	...	50 to 78	(127 to 198.12)
REAR (in 4in.(10.16cm) stages)	in. (cm)	...	50 to 74	(127 to 187.96)

Width overall

Front wheels	in. (cm)	...	...	61 to 89	(154.94 to 226.06)
Rear wheels	in. (cm)	...	...	64 to 91	(162.56 to 231.14)

Wheelbase	in. (cm)	74-7/16 (189.07)
-----------	----------	-----	-----	-----	------------------

Height to top of steering wheel	in. (cm)...	66	(167.64)
---------------------------------	-------------	-----	-----	----	----------

Ground clearance

Under rear frame	in. (cm)	...	...	...	21-1/4 (53.98)
Under front axle	in. (cm)	...	...	...	26-3/8 (66.99)

Turning radius (at min.setting) in. (cm)

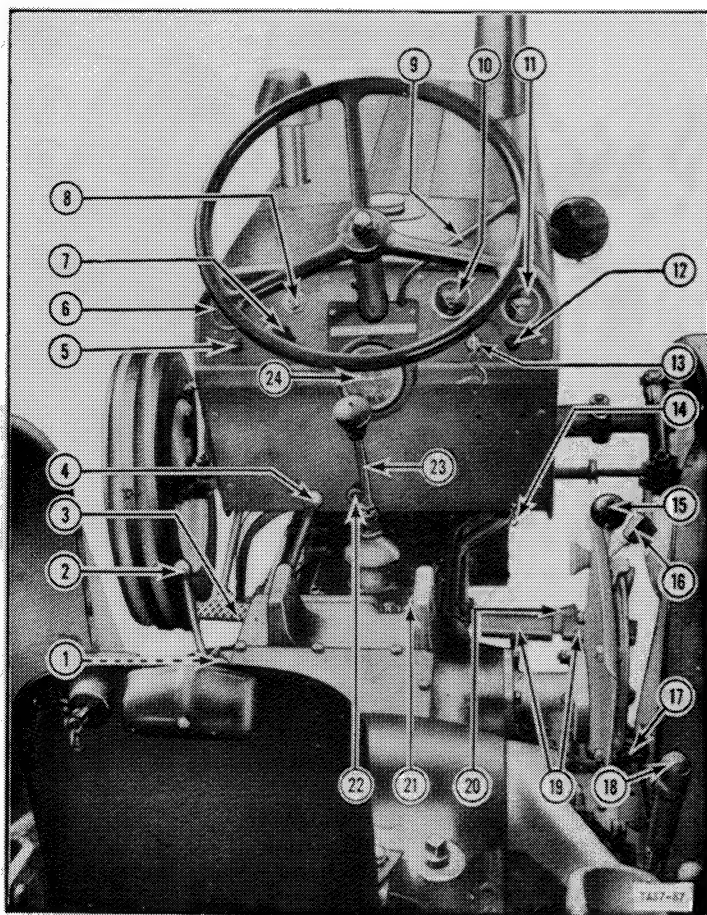
Without brakes	....	....	...	...	133 (337.82)
With brakes	...	...	...	...	113 (287.02)

Lift at end of lower links with links horizontal	lb (kg)	2600	(1180)
--	---------	------	--------

Operating weight (approx.) lb (kg)

including fuel, oil, water, hydraulic system with three point linkage, standard P.T.O. and lighting	3589	(1615.05)
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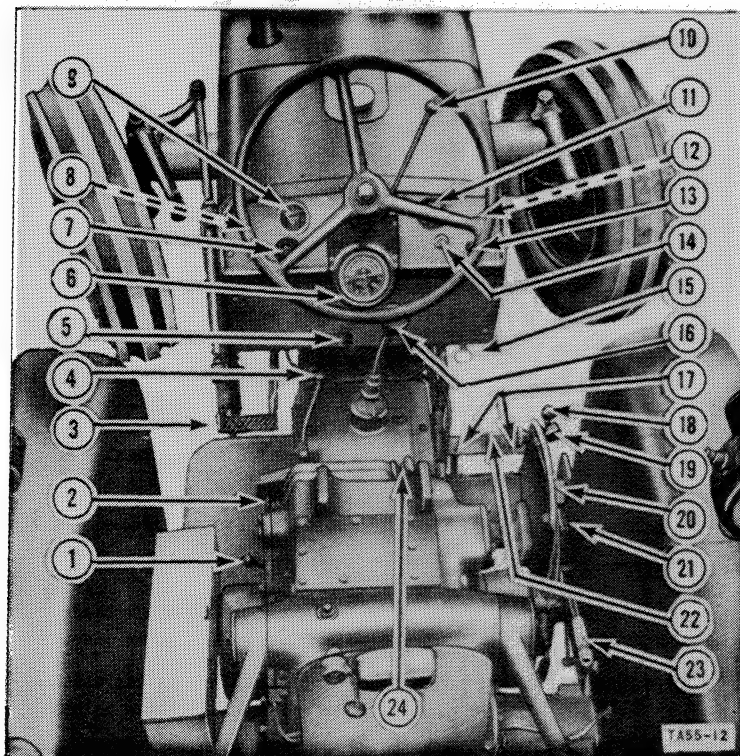
INSTRUMENTS & CONTROLS



- | | |
|-----------------------------------|---|
| 1. Response control | 13. Keyswitch |
| 2. Rear P.T.O. Lever (Attachment) | 14. Radiator curtain control (Attachment) |
| 3. Clutch pedal | 15. Position control lever |
| 4. High-low shifter lever | 16. Draft control lever |
| 5. Fuse | 17. Differential lock pedal |
| 6. Ammeter | 18. Brake pedal locking lever |
| 7. Light switch | 19. Brake pedals |
| 8. Glow plug indicator | 20. Brake latch |
| 9. Governor control | 21. Isolating valve |
| 10. Heat indicator (Attachment) | 22. Engine stop control |
| 11. Engine oil pressure gauge | 23. Gear shift lever |
| 12. Horn button | 24. Tractormeter (Attachment) |

Illust.5 Instruments & Controls (DIESEL)

INSTRUMENTS & CONTROLS



- | | |
|--------------------------------|---|
| 1. P.T.O. lever (Attachment) | 13. Horn button |
| 2. Response control | 14. Keyswitch |
| 3. Clutch pedal | 15. Radiator curtain control (Attachment) |
| 4. High-low shifter lever | 16. Gear shift lever |
| 5. Choke control | 17. Brake pedals |
| 6. Tractormeter (Attachment) | 18. Position control lever |
| 7. Light switch | 19. Draft control lever |
| 8. Oil pressure warning light | 20. Foot accelerator (Attachment) |
| 9. Heat indicator (Attachment) | 21. Differential lock pedal |
| 10. Governor control lever | 22. Brake latch |
| 11. Ammeter (Attachment) | 23. Brake pedal locking lever |
| 12. Ignition warning light | 24. Isolating valve |

Illust.6 Instruments & Controls (PETROL)

GENERAL

This section explains briefly the operation of the instruments and controls. Fuller details, where necessary, will be found in the relevant operating section.

The operator must be thoroughly acquainted with the location and use of all instruments and controls and regardless of experience must read this section carefully before attempting to operate the tractor.

INSTRUMENTS & CONTROLS

CONTROLS

The controls are situated within easy reach of the operator and the movement of these should be checked before the engine is started.

CLUTCH PEDAL

This pedal is used to engage and disengage the engine clutch. The clutch is disengaged when the pedal is fully depressed.

When the tractor is equipped with a single speed constant running power take-off attachment, partial depression of the clutch pedal disengages the engine clutch leaving the P.T.O. still in operation. Further depression of the pedal disengages the P.T.O.

BRAKE PEDALS

These pedals are used to stop the tractor when latched together with the pedal latch or separately to facilitate sharp turning. The pedals must be locked together when travelling on the highway. The pedals may be held in the engaged position by applying the brake pedal locking lever.

CAUTION: The "BALANCE" of the braking system should be checked each week, or whenever the tractor is taken on the road after working extensively, when one brake is used more than the other. If this precaution is not taken an unexpected and dangerous swerve may occur.

GEAR SHIFT LEVER

This lever is used to select the required transmission gear ratio.

HIGH/LOW SHIFTER LEVER

This lever is used to select the high or low speed range for any one position of the gear shift lever.

GOVERNOR CONTROL LEVER

Moving this lever downward increases engine speed, moving the lever upward decreases engine speed.

KEYSWITCH (DIESEL)

Turn the key clockwise to the first position to energise the instrument circuit. Depress and hold the key to energise the glowplugs and turn the key fully clockwise against the spring loading to operate the starter motor. Release the key IMMEDIATELY the engine fires.

KEYSWITCH (PETROL)

Turn the key clockwise to the first position to energise the instrument circuit and turn the key fully clockwise against the spring loading to operate the starter motor. Release the key IMMEDIATELY the engine fires.

ENGINE STOP CONTROL

Pulling this control knob will shut off the fuel supply to the engine.

NOTE: This knob is coloured RED for easy identification in case of emergency.

INSTRUMENTS & CONTROLS

CHOKE CONTROL (PETROL)

Pulling this control out provides the correct air and fuel mixture for starting the engine from cold.

NOTE: DO NOT move the governor control lever beyond the low idle position and return the choke control to the fully forward position as soon as possible.

DIFFERENTIAL LOCK PEDAL

This pedal when depressed by heel pressure operates a differential lock mechanism which locks the axle shafts together and thus overcomes individual rear wheel slip.

BRAKE PEDAL LOCKING LEVER

This is an over-centre type lever which is used to lock the brake pedals in the engaged position for parking purposes.

AMMETER

This instrument indicates the rate at which the battery is being charged or discharged. If a continuous discharge is indicated with the engine running above low idle, the cause should be investigated to prevent complete discharge of the battery and possible damage to the generator.

It should be noted that with the compensated voltage control system, the rate of charge varies, according to the state of charge of the battery and does not necessarily mean a fault in the circuit.

IGNITION WARNING LIGHT (PETROL)

This light indicates when the generator is not charging at a satisfactory rate to replace electric energy in the battery. The light should be extinguished when the engine is running above low idle. If the light stays on continuously the cause should be located and the fault corrected to prevent complete discharge of the battery.

LIGHT SWITCH

This is a four position light switch. First position operates the side and tail lights. Second position operates side, tail and dipped main beam. Third position operates side, tail and full main beam and the fourth position operates full main beam only.

The rear working light is equipped with an integral push button switch and so can be operated independently of the main light switch.

GLOWPLUG INDICATOR

This indicates the correct functioning of the glowplugs. When the indicator reaches maximum brilliance the glowplug elements have reached the desired operating temperature to start the engine.

HEAT INDICATOR

This instrument indicates when the coolant is at the correct operating temp-

INSTRUMENTS & CONTROLS

erature. The needle should register in the centre of the "RUN" range for best engine performance.

REAR P.T.O. LEVER

Move this lever rearward to engage and forward to disengage the rear P.T.O.

CAUTION: On early machines, the single speed regular P.T.O. incorporated a lock out feature to prevent the rear P.T.O. being used with the HIGH range of gears. ON later machines, this P.T.O. must NOT be used in the HIGH range of gears.

OIL PRESSURE GAUGE

This gauge indicates when the lubricating oil is circulating through the engine at the correct pressure. The needle should register in the WHITE area of the gauge when the engine is running above low idle. If the needle does not register in the WHITE area, stop the engine IMMEDIATELY and investigate the cause. If you are unable to locate the cause, consult your INTERNATIONAL HARVESTER dealer before re-starting the engine.

OIL PRESSURE WARNING LIGHT (PETROL)

The green light glows when the keyswitch is operated and should be extinguished within a few seconds of the engine starting. If the light fails to go out stop the engine IMMEDIATELY and investigate the cause. If you are unable to locate the cause, consult your INTERNATIONAL HARVESTER dealer before re-starting the engine.

TRACTORMETER

This instrument records the engine hours run, engine revolutions per minute and the tractor speeds in miles per hour. To obtain the correct P.T.O. speed adjust the governor control lever until the rev/min reading corresponds with the transfer on the instrument face.

POSITION CONTROL LEVER

Moving the lever forward lowers the three point linkage, moving the lever rearward raises the linkage.

DRAFT CONTROL LEVER

This lever governs the working depth of the implement. The lever is moved rearward to shallow and forward to deepen.

RESPONSE CONTROL

This control regulates the delivery from the hydraulic pump to the hydraulic system. Push in the knob and turn ANTI-CLOCKWISE for SLOW delivery rate.

ISOLATING VALVE

This valve is used to isolate the three point linkage hydraulic system. By closing the valve the linkage is hydraulically locked and provides a safety device against inadvertent movement of the position control lever.

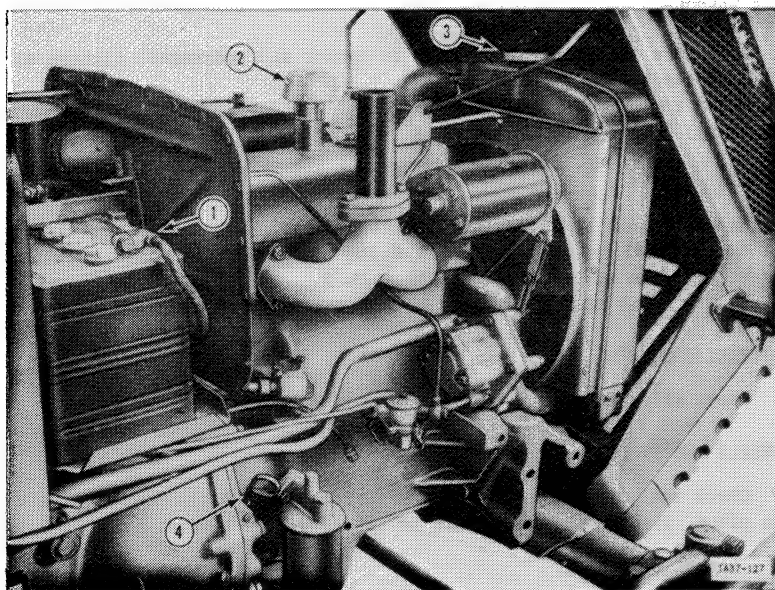
NOTE: THE VALVE MUST ALWAYS BE FULLY OPEN OR FULLY CLOSED.

FOR BETTER PERFORMANCE AND SAFE OPERATION

- DO - ENSURE THAT ALL SAFETY SHIELDS ARE IN PLACE AND IN GOOD CONDITION.
- DO - read all operating instructions before commencing to operate the tractor.
- DO - carry out all daily maintenance tasks every day without fail.
- DO - keep the air cleaner clean and the oil at the correct level.
- DO - ensure that the correct grade of approved lubricating oils are used and that it is replenished and changed at the recommended intervals.
- DO - fit new sealing rings when the filter elements are changed.
- DO - watch the oil pressure gauge or warning light and investigate any abnormality IMMEDIATELY.
- DO - keep the radiator filled with clean water and in cold weather use anti-freeze, drain the system only in an emergency and refill BEFORE starting the engine.
- DO - ensure that the transmission is in NEUTRAL before starting the engine.
- DO - keep all fuel in CLEAN storage and use a filter when filling the tank.
- DO - attend to minor adjustments and repairs as soon as necessity is apparent, when in doubt consult your INTERNATIONAL HARVESTER dealer.
- DO - allow the engine to cool before removing the radiator filler cap and adding water. Remove the radiator cap SLOWLY.
- DO - shift into low gear when driving down steep hills.
- DO - ensure that brakes and lighting are in good working order.
- DO - latch the brake pedals together when driving on the highway.

- DON'T - run the engine with the air cleaner disconnected.
- DON'T - start the tractor in an enclosed building unless the doors and windows are open.
- DON'T - operate the tractor or engine when lubricating or cleaning.
- DON'T - allow the tractor to run out of diesel fuel otherwise it will be necessary to vent the system.
- DON'T - interfere with the fuel injection pump, if the seal is broken your warranty becomes void.
- DON'T - allow the engine to idle for long periods.
- DON'T - run the engine if it is not FIRING on all cylinders.
- DON'T - ride the brakes or clutch, this will result in excessive wear of the brake linings, clutch driven member and thrust bearing.
- DON'T - use the independent brakes for making turns on the highway or at high speeds.
- DON'T - refuel the tractor with the engine running.

BEFORE STARTING A NEW TRACTOR



- | | |
|----------------------------------|---------------------------|
| 1. Battery earth cable | 3. Radiator filler cap |
| 2. Crankcase oil filler/breather | 4. Crankcase oil dipstick |

Illust.7 Battery, Crankcase & Radiator Filler Points

GENERAL

The operator should thoroughly acquaint himself with the position and operation of instruments and controls whatever his previous experience.

Illust.7 shows the battery, crankcase dipstick, crankcase oil and radiator filler points. DO NOT ATTEMPT TO START THE ENGINE OR DRIVE THE TRACTOR BEFORE THE FOLLOWING POINTS HAVE BEEN CHECKED OR SERIOUS DAMAGE MAY RESULT.

LUBRICATION

Check levels and lubricate the entire tractor referring to the LUBRICATION CHART. Refer to the LUBRICATION GUIDE for correct grades of lubricants.

SHIP-AWAY OILS

Tractors received with the engine crankcase factory filled will contain SAE-20 oil. This oil may be used for the first 25 hours if the tractor is to be operated in temperatures between +32°F and +90°F. If the temperature is not within this range, drain the oil from the crankcase, oil filter and air cleaner and refill with the grade of oil specified in the LUBRICATION GUIDE.

AFTER THE FIRST 25 HOURS OF OPERATION, THE OIL FILTER AND CRANKCASE OIL MUST BE REPLACED.

BEFORE STARTING A NEW TRACTOR

AIR CLEANER

Make sure that the air cleaner is intact and undamaged, tighten all connections securely.

NEVER OPERATE THE ENGINE WITH THE AIR CLEANER REMOVED, DISMANTLED OR DISCONNECTED FROM THE INTAKE MANIFOLD.

COOLING SYSTEM

Make sure the radiator is filled to a level just below the filler cap neck. If the prevailing temperature is below 32°F an anti-freeze solution MUST be used. Refer to COLD WEATHER PRECAUTIONS.

ON NO ACCOUNT MUST THE ENGINE BE STARTED BEFORE THE COOLING SYSTEM IS FILLED.

HYDRAULIC SYSTEM

Check all pipes, hoses and unions for tightness.

WHEELS AND TYRES

Check that tyres are properly inflated and that the dust caps are securely in place. Tighten the wheel nuts to the specified torque.

FUEL SYSTEM

After ensuring that all pipes are properly connected, fill the fuel tank with clean fuel.

NOTE: Should venting be necessary, proceed as detailed under VENTING THE FUEL SYSTEM.

ELECTRICAL SYSTEM

Tractors shipped from the factory have the battery to earth cable (1 Illust. 7) removed and taped. Connect this earth cable to the positive terminal, ensure that both terminals are tight and that the battery is securely held in place.

NOTE: DO NOT OVERTIGHTEN THE BATTERY HOLD-DOWN RETAINER NUTS.

Check the level and specific gravity of the electrolyte.

PREPARING THE TRACTOR FOR EACH DAY'S WORK

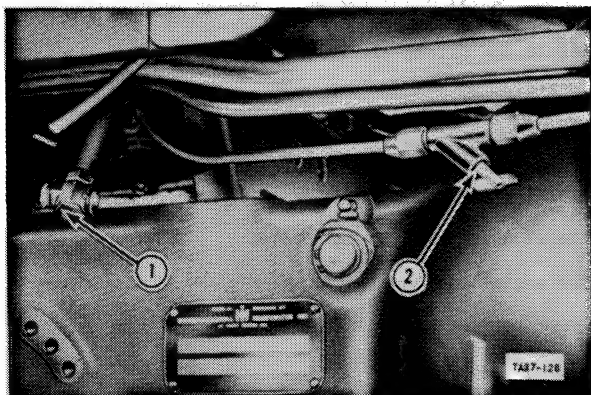
FUEL SYSTEM

Fill the fuel tank at the end of each day's work to reduce condensation in the tank.

On the diesel fuel system, open the water drain tap (1 Illust. 8) and allow water to drain into a container. Close the tap when fuel free from water flows.

Check that the fuel shut-off tap (2 Illust. 8) is open (screwed fully out) and that the air vent hole in the fuel tank filler cap is clear.

PREPARING THE TRACTOR FOR EACH DAY'S WORK



Illust.8 Water Drain (DIESEL only) and Fuel Taps

COOLING SYSTEM

Check that the coolant level is just below the filler cap neck. When using anti-freeze always top up with a solution of water and anti-freeze in the correct proportions.

WHEELS AND TYRES

Check and adjust the tyre pressures to suit the work intended. Adjust the wheel tread as required.

LUBRICATION

Grease all 10 hourly (DAILY) points shown on the LUBRICATION CHART. Check that the crankcase oil is up to the "FULL" mark on the dipstick.

NOTE: The tractor should be standing on level ground to check oil levels. If the engine has been run, allow to stand for several minutes to let the oil settle before checking.

AIR CLEANER

Clean and replenish the oil cup. In extremely dusty conditions more frequent cleaning may be necessary.

BATTERY

Check that the level of the electrolyte is $\frac{3}{8}$ of an inch above the separators. Top up as necessary.

OPERATING THE ENGINE

DO NOT ATTEMPT TO START THE ENGINE BY TOWING OR COASTING. TO DO SO MAY CAUSE SERIOUS DAMAGE TO THE ENGINE AND TRANSMISSION.

STARTING THE ENGINE

1. Ensure that the brake pedal locking lever is applied and all controls are in the NEUTRAL position.
2. Check the coolant level in the radiator.
3. Check the engine oil level.
4. Check that sufficient fuel is available and that the fuel shut-off tap is open.
5. Depress the engine clutch pedal to disengage the drive from the engine to the transmission. On tractors equipped with constant running P.T.O. a two pressure clutch is used. First pressure travel need only be used to disengage the transmission.

6. STARTING THE DIESEL ENGINE

- (a) Ensure that the engine stop control is pushed fully home.
- (b) Advance the governor control lever to the fully open position (lever down).
- (c) Turn the starting key clockwise to the first position and depress to energise the glow plugs. When the glow plug indicator glows brightly turn the key fully clockwise against the spring pressure to engage the starter motor. Release the key IMMEDIATELY the engine starts.

NOTE: It will assist the engine to fire evenly, especially when cold, if the glow plug circuit is energised for a further short period after starting the engine.

- (d) To re-start a warm engine simply turn and hold the key fully clockwise. Release IMMEDIATELY the engine starts.
- (e) When the engine is firing evenly, reduce the governor setting to just above low idle.

7. STARTING THE PETROL ENGINE

- (a) Pull out the choke control knob.
- (b) Turn the keyswitch fully clockwise against the spring pressure to energise the starter motor. Release the key IMMEDIATELY the engine fires.
- (c) The choke control knob should be pushed home as soon as possible after the engine starts.
- (d) To re-start a warm engine it may not be necessary to use the choke control.

8. If the engine does not start after engaging the starter motor for 15 seconds allow 20 seconds for the battery to recuperate before repeating the procedure. For protection of the battery it is preferable to increase the pre-glowing of the glow plugs (diesel engine) rather than apply the starter motor too often.

OPERATING THE ENGINE

If the engine will not start after four such applications, do not waste the battery further, but refer to FAULT TRACING.

STOPPING THE ENGINE

1. Prior to stopping, the engine should be allowed to idle for a short period thus cooling it gradually while oil and coolant are still circulating.

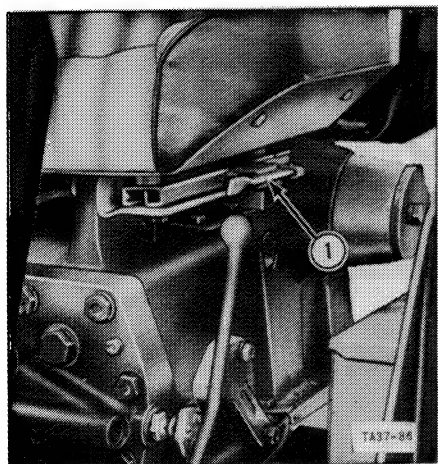
2. STOPPING THE DIESEL ENGINE

(a) Pull out the engine stop control.

3. STOPPING THE PETROL ENGINE

(a) Simply turn the key to the "OFF" position.

DRIVING THE TRACTOR



ADJUSTING THE SEAT

To adjust the seat, push the lever (1 Illust.9) away from the operator and move the seat to the desired position.

Check that the seat is locked safely after adjustment.

NOTE: The seat pins must be in the front holes in the rear frame cover at all times.

SETTING THE TRACTOR IN MOTION

1. When the engine has been started and thoroughly warmed up, set the governor control to just above half engine speed.

Illust.9 Seat Adjustment

2. Depress the engine clutch pedal to disengage the drive from the engine to the transmission.

NOTE: With the two pressure clutch the first stage operates the transmission only.

3. Move the gear shift lever and Hi-low shift lever into the desired speed position (Illust.10).

4. Apply the footbrakes and release the brake pedal locking lever.

5. Engage the transmission by slowly releasing the clutch pedal.

NOTE: DO NOT suddenly release the clutch pedal as this will impose shock loads on the transmission and may stall the engine.

DRIVING THE TRACTOR

STEERING THE TRACTOR

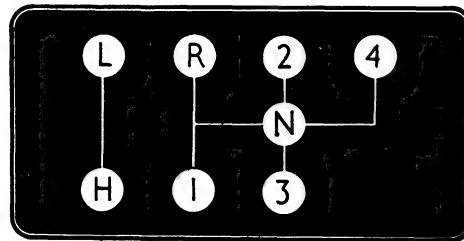
Steering the tractor is in the conventional manner but assistance can be gained in making sharp turns by applying the footbrake on the side to which the turn is to be made.

CAUTION: SHARP TURNS SHOULD NOT BE MADE IN HIGH GEAR.

DO NOT ride the brake or clutch pedals as this will result in rapid wear of the brake linings, clutch driven member and thrust bearings.

STOPPING THE TRACTOR

1. Depress the engine clutch pedal and at the same time apply the footbrakes.
2. When the tractor has come to rest apply the footbrakes and move the brake pedal locking lever to the engaged position.
3. Move the gear shift lever to the NEUTRAL position.
4. Release the clutch pedal and move the governor control lever to just above the low idle position.



T37-41

Illust.10 Gear Positions

CHANGING GEAR

Stop the tractor, select the gear required and slowly release the engine clutch.

NOTE: If the engine labours at full governed speed, stop the tractor and select a lower gear ratio.

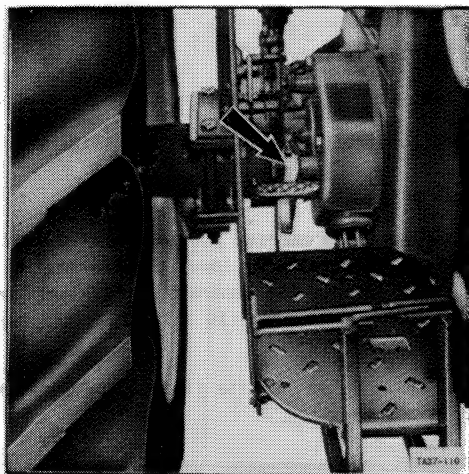
When using a long chain to hitch the tractor to a load, drive the tractor forward SLOWLY until all the slack is taken out of the chain.

TOWING THE TRACTOR

CAUTION: IF THE POWER TRAIN IS DAMAGED, DO NOT TOW THE TRACTOR BUT HAVE IT TRANSPORTED ON ANOTHER VEHICLE TO AVOID FURTHER DAMAGE.

To tow the tractor place all the controls in NEUTRAL, disengage the engine clutch and, using a towing cable of sufficient length, tow the tractor in the conventional manner.

DRIVING THE TRACTOR



Illust.11 Differential Lock Pedal

DIFFERENTIAL LOCK

The purpose of the differential lock is to overcome the one wheel slip encountered under bad field conditions, especially when ploughing or hauling heavy trailers on slippery surfaces.

A pedal (Illust.11) located on the right foot brake housing, is operated by heel pressure the differential being locked whenever the pressure is applied. Thus it is impossible for the rear wheels to turn at different speeds.

Engagement normally takes place while the tractor is still in motion and a spring loaded safety device is incorporated to prevent over-forceful engagement.

If one wheel is spinning too quickly for engagement to take place, a clicking noise will be heard. If this continues for more than a few seconds, depress the engine clutch pedal momentarily and the differential lock will engage immediately.

Should difficulty be encountered in disengaging the differential lock, a quick pressure on the left footbrake (when ploughing) or a momentary depression on the clutch pedal, will relieve the torque on the engagement collar.

Continual engagement of the differential lock when ploughing is not harmful to the wearing parts. The tractor can follow gently curving furrows without undue strain on the locking mechanism, gear or shafts. However, the differential lock **MUST BE DISENGAGED BEFORE ATTEMPTING TURNS.**

CAUTION: The differential lock is designed solely for use with pneumatic tyres. If steel wheels, girdles etc. are fitted the differential lock pedal should be removed as a precaution against accidental use.

ALWAYS ENSURE THAT THE DIFFERENTIAL LOCK IS DISENGAGED BEFORE MAKING TURNS OR TRAVELLING ON THE HIGHWAY.

OPERATING THE "VARY-TOUCH" HYDRAULIC SYSTEM

GENERAL

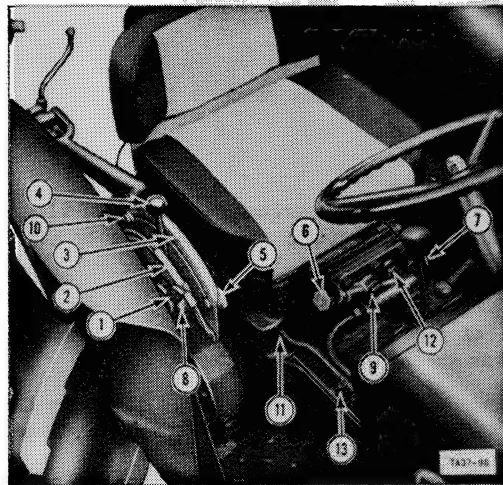
The "VARY TOUCH" system incorporates:-

- | | |
|-----------------------------|----------------------|
| (a) Position control | (c) Response control |
| (b) Automatic draft control | (d) Isolating valve |

All these controls are within easy reach of the operator.

The main operating quadrant carries two levers; the POSITION CONTROL LEVER (4 Illust.12) which is used to raise or lower the linkage, and the DRAFT CONTROL LEVER (1 Illust.12). In addition the quadrant carries the position control stop screw (5 Illust.12), upper limit stop (10 Illust.12) and the draft control adjustable sector (2 Illust.12).

NOTE: The upper limit stop is set at the factory and serious damage may result if this is altered in any way.



1. Draft control lever
2. Draft control sector
3. Quadrant
4. Position control lever
5. Position control stop screw
6. Isolating hand wheel
7. Response control
8. Draft control sector screw
9. Auxiliary tapping
10. Upper limit stop
11. Suction strainer
12. Orifice filter
13. Hose connections

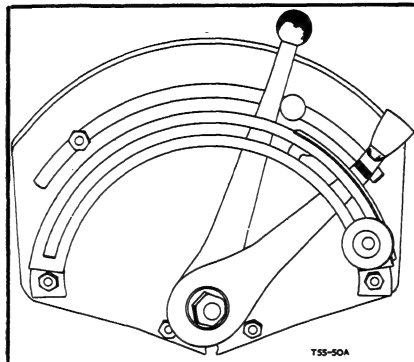
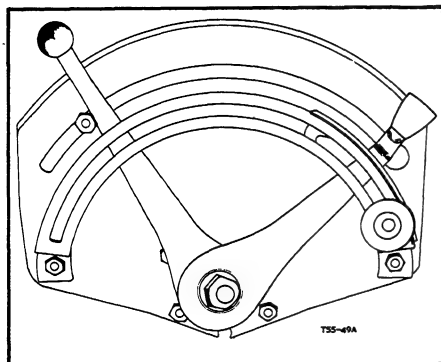
Illust.12 "VARY TOUCH" Hydraulic Controls

OPERATING THE POSITION CONTROL

This lever (4 Illust.12) controls the lifting and lowering of all implements used on the three point linkage. Move the lever FORWARD to lower and REARWARD to raise.

The control can be set to govern the height of out-of-ground implements such as mowers, buck rakes etc. so that the implement can be lowered to exactly the same height at the commencement of each run.

OPERATING THE "VARY-TOUCH" HYDRAULIC SYSTEM



Illust.13 Operating Position Control Illust.14 Position Control set to give a desired height

SETTING THE POSITION CONTROL

1. Move the draft control lever to its most forward position.
2. Move the position control lever back against its upper limit to lift fully (Illust.13).
3. Now move the position control lever forward smoothly until the implement has reached the desired working height.
4. Set the position control stop screw against the lever and tighten the knurled knob (Illust.14). Whenever the lever is returned to this stop from the lift position the implement will return to and remain at this pre-set height.

OPERATING THE DRAFT CONTROL

As the draft of the implement varies due to irregularities of ground contour, soil texture or the pitching of the tractor, so the load on the top link of the three point linkage will vary. These load changes are transferred through the internal mechanism into hydraulic valve movement.

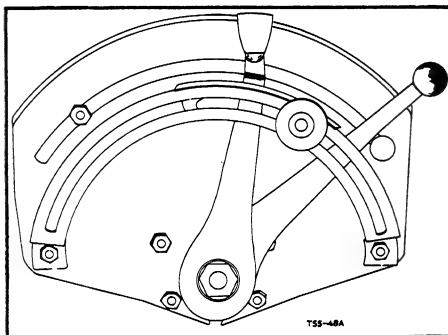
By means of the DOUBLE ACTING TOP LINK, the draft control system reacts not only when the top link is in compression as is usually the case when ploughing, but also when the top link is in tension as with shallow working implements such as steerage hoes, vibrating tillers, weeder etc.

An increase in implement depth will increase the compression or reduce the tension on the top link and the system will go to lift. Conversely, a decrease in depth will automatically put the system to lower.

By setting the DRAFT CONTROL LEVER the load required to maintain the valve in the hold position is governed. Therefore the load the tractor has to pull is maintained constant irrespective of ground contours, soil conditions or the pitching of the tractor.

To shallow the implement the lever is moved REARWARD and to deepen it is moved FORWARD.

OPERATING THE "VARY-TOUCH" HYDRAULIC SYSTEM



Illust.15 Draft Control set to give a desired depth

SETTING THE DRAFT CONTROL

(a) Slacken the sector screw (8 Illust.12).

(b) Move the position control stop (5 Illust.12) to the front of the quadrant and lock it with the knurled knob.

(c) Lift the implement off the ground by pulling the POSITION control lever back against the upper limit stop.

(d) Lower the implement into work by moving the POSITION control lever smoothly to its most forward position.

NOTE: The faster the lever is moved FORWARD the quicker the implement will drop.

(e) When the implement has reached the desired working depth move the DRAFT control lever REARWARD until the linkage begins to lift due to the load on the top link. This will be the position of the lever (Illust.15) for a particular type of soil.

NOTE: UNDER NO CIRCUMSTANCES MUST THE DRAFT CONTROL LEVER BE USED FOR LIFTING THE LINKAGE TO ITS UPPERMOST POSITION. To do so will cause the main relief valve to operate continuously and serious overheating of the system will occur. All movements out of and into the soil should be made with the POSITION control lever.

(f) Having obtained the required setting adjust the sector (2 Illust.12) so that the lever is mid-way along it and lock in this position with the knurled knob. This acts as a safety feature to prevent inadvertent use of the draft control lever and also provides a working range of the draft control lever in which depth correction may be made due to soil variations.

It will be noted that when the soil texture remains constant, the implement is partially carried on the three point linkage. Therefore a proportion of the implement weight is transferred to the tractor rear wheels to improve traction. When a condition arises to cause an increase in draft, the system will go to lift and the complete weight of the implement is transferred to the rear wheels of the tractor to provide maximum traction. As soon as the draft returns to normal the system goes to lower and the situation returns to its former condition.

Under conditions where the surface contours of the field are irregular, the International "VARY TOUCH" system will ensure that the implement maintains constant depth irrespective of the varying attitudes of the tractor.

Should the front wheels of the tractor drop into a furrow, then the tendency is for the implement to lift out of the ground. As the implement rises, the draft decreases, the system goes to lower and maintains the implement at its pre-set depth. Similarly, if the rear wheels drop into a furrow the implement tends to go deeper, the draft increases and the system goes to lift, again maintaining the pre-set depth.

OPERATING THE "VARY-TOUCH" HYDRAULIC SYSTEM

Thus it will be seen that under all operating conditions the "VARY TOUCH" system will provide maximum traction and constant implement depth.

THE RESPONSE CONTROL

A two position response valve (7 Illust.12) is provided to regulate the delivery from the hydraulic pump to the hydraulic system.

The "fast" position provides high speed operation of equipment such as front and rear loaders, buck rakes, tipping trailers etc.

The "slow" position is used when the draft control system is in use. The slower delivery to the valve prevents the system from reacting too vigorously in response to load changes in the top link and thus provides smoother, more controlled operation of the draft control system.

To operate, push the knob inward and turn a quarter of a turn ANTI-CLOCKWISE for "SLOW" and CLOCKWISE for "FAST".

NOTE: When the hydraulic system is in constant use, e.g. Front End Loader work, FAST SPEED MUST BE USED, otherwise the system may overheat.

THE ISOLATING VALVE

This valve (6 Illust.12) is used to prevent operation of the three point linkage when external services are in operation and when transporting mounted implements.

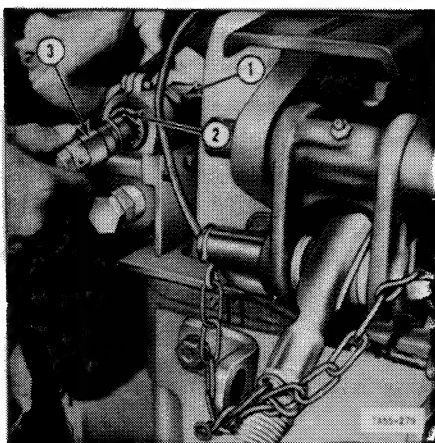
When the knob is screwed fully clockwise, the valve is closed and the linkage is hydraulically locked providing a safety device against inadvertent movement of the position control lever. THE VALVE MUST ALWAYS BE FULLY OPEN OR FULLY CLOSED.

SELF SEALING COUPLING (Attachment)

Hydraulic connections to equipment fitted with remote cylinders are made through self sealing couplings of the breakaway type or screw type. The breakaway type is shown in Illust.16.

To make the connection press the front section (1 Illust.16) rearward against the spring pressure until the balls (2 Illust.16) are exposed then push in the remote cylinder connection (3 Illust.16) and release the front section.

To disconnect, press the front section rearward, pull out the remote cylinder connection and release the front section.



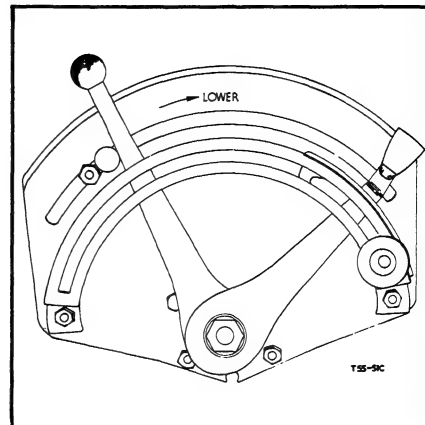
Illust.16 Self Sealing Coupling

OPERATING REMOTE CYLINDERS

WHEN THREE POINT LINKAGE IS NOT IN USE

Move the draft control lever to the front of the quadrant and lock the slide.

Move the adjustable position control stop back to the upper limit stop and lock in this position then move the position control lever back to the adjustable stop (Illust.17). Close the isolating valve without moving the control lever. This becomes the "HOLD" position for the remote cylinders. To extend the remote cylinders push the lever out from the quadrant to clear the adjustable stop then move it back to the fixed upper limit stop. As soon as the cylinders are fully extended return the lever to the "HOLD" position.



Illust.17 Operating Remote Cylinders
(HOLD position)

To retract the cylinders move the lever forward of the hold position.

CAUTION: NEVER DRIVE WITH POSITION CONTROL LEVER AGAINST UPPER LIMIT STOP WHEN USING REMOTE CYLINDERS.

WHEN USING THREE POINT LINKAGE DRAWBAR

Remove the support struts from the bellcrank pin. Move the draft control lever to the fully forward position and lock the slide.

Move the position control lever until the drawbar is at the required height above the ground.

Move the adjustable stop until it contacts the position control lever then close the isolating valve. This is the "HOLD" position for the remote cylinders.

Fit the support struts without changing the height of the drawbar.

To extend the remote cylinders move the position control lever rearward. As soon as the cylinders are fully extended return the lever to the "HOLD" position; failure to do so will cause the hydraulic system to overheat. To allow the cylinders to retract, push the lever out clear of the adjustable stop and move it forward. Return to the "HOLD" position on completion.

When an implement is carried on the three point linkage the procedure is the same except that references to the support struts should be disregarded.

WHEN USING THE AUTOMATIC HITCH

After adjusting the automatic hitch, move the position control lever against the adjustable stop. When the linkage comes to rest, close the isolating valve. This becomes the "HOLD" position for the remote cylinders.

OPERATING REMOTE CYLINDERS

To extend the cylinders move the control lever past the adjustable stop up to the upper limit stop. As soon as the cylinders are fully extended move the lever to the "HOLD" position.

After a considerable time in use it may be found that the remote cylinders cease to function. This is due to the isolator valve leaking slightly. To reset, open the isolator valve, lift the automatic hitch latch and lower the automatic hitch using the position control lever. Reset as above.

AUXILIARY CONTROL VALVES (Attachment)

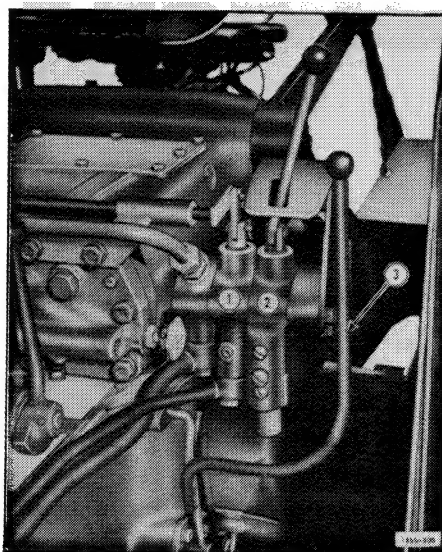
AUXILIARY CONTROL VALVES (Attachment)

Two types of auxiliary control valve are available for operating remote cylinders independently of the three point linkage controls. The single acting type and the double acting type.

In all cases the lever for the first valve (1 Illust.18) is on the right hand side of the tractor, and the lever for the second valve (2 Illust.18) is on the left. Move the levers rearward for raise and forward for lower. The levers will return to the "HOLD" position when released.

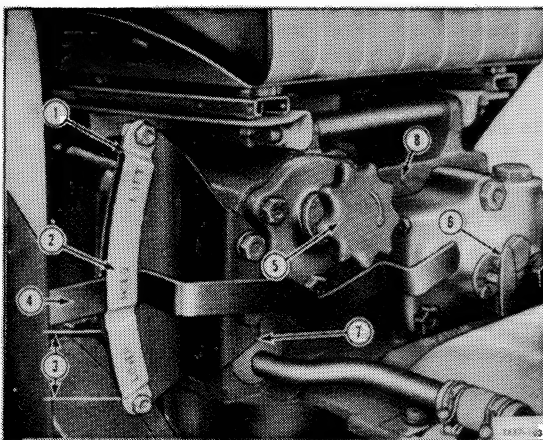
When making connections to the double acting valve, the "RAISE" hose of the equipment must be connected to the upper port.

When auxiliary valves are fitted the power take off lever (3 Illust. 18) must be changed.



Illust.18 Auxiliary Hydraulic Controls

OPERATING THE MECHANICAL DEPTH CONTROL HYDRAULIC SYSTEM



1. LIFT position
2. HOLD position
3. LOWER position
4. Main control lever
5. Depth control handwheel
6. Isolating valve
7. Suction filter
8. By-pass filter

Illust.19 Hydraulic Controls (Mechanical Depth Control)

GENERAL

The mechanical system incorporates:

(a) THE MAIN CONTROL LEVER (4 Illust.19) which is used to raise or lower the linkage.

(b) THE DEPTH CONTROL HANDWHEEL (5 Illust.19) which varies the lower limit of the linkage.

(c) THE ISOLATING VALVE (6 Illust.19) which prevents operation of the linkage when external services are in operation.

All these controls are on the front of the lift housing within easy reach of the operator.

OPERATING THE MAIN CONTROL

This lever has three positions within its quadrant, "LIFT", "HOLD" and "LOWER".

Raise the lever to the top of the quadrant for the "LIFT" position (1 Illust.19) until the required amount of lift is obtained. When released the lever will return to the "HOLD" position (2 Illust.19). In this position the linkage will be held as desired by the operator.

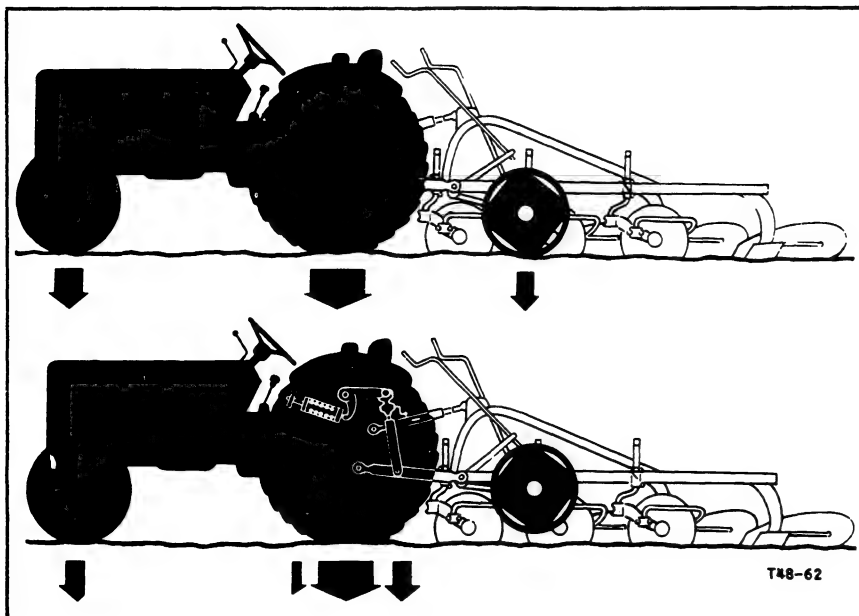
The position of the lever below the "HOLD" position determines the speed of lowering. The further the lever is moved down the quadrant the faster the linkage and equipment will drop. This is particularly useful for lowering heavy equipment gently to the ground with absolute control.

OPERATING THE MECHANICAL DEPTH CONTROL HYDRAULIC SYSTEM

OPERATING THE DEPTH CONTROL

By turning the handwheel the lower limit of the linkage can be varied. The handwheel controls a spring loaded mechanical stop. Turning the wheel clockwise lowers the limit of fall and anti-clockwise brings the limit of fall to a higher position. One full turn of the wheel affects the limit fall by approximately one inch relative to the previous setting.

CAUTION: IMPLEMENTS SHOULD NOT BE DROPPED QUICKLY ONTO DEPTH CONTROL STOP.



Illust.20 Weight Transfer

WEIGHT TRANSFER AND DEPTH CONTROL

Weight transfer from the implement to the tractor improves traction, reduces wheel slip and allows more economical field usage by increasing work capacity. Weight transfer should therefore be understood to make the fullest use of its advantages.

When depth wheels are in use on an implement these wheels carry weight. By winding up these wheels and setting the depth control handwheel, much of this weight can be transferred to the tractor rear wheels (Illust.20) through the depth control stop.

The top link is used in the telescopic setting for this application, and it can be seen that when the top link undergoes telescopic action because of uneven ground conditions the contact with the depth control stop would be lost. This is overcome by incorporating a compensating spring within the depth control stop which keeps this contact in operation (Illusts.21, 22 & 23).

OPERATING THE MECHANICAL DEPTH CONTROL HYDRAULIC SYSTEM

Thus by use of the telescopic top link and the spring compensated depth control stop, the implement is less affected by the rise and fall of the front and rear wheels over uneven ground and, therefore, a higher standard of regular depth control can be achieved.

When using the weight transfer the telescopic setting of the top link must always be used with the link in compression (adjustment may be made on the turnbuckle)

SETTING THE DEPTH BELOW GROUND (Mounted Implement without Land Wheel)

Ensure the depth control handwheel is turned clockwise to its deepest position. Drop the implement into work until it has reached the desired working depth.

Stop the tractor and turn the handwheel anti-clockwise until the stop contacts the rockshaft cam. Raise the implement on the main control lever to allow a further 2 to 3 full turns shallower on the handwheel. Put the main control lever to the full lower position and commence work. When the implement is lowered onto the stop the spring is pre-loaded and weight transferred to the rear axle.

SETTING THE DEPTH (Mounted Implement with Land Wheel)

When an implement is used with a land wheel, the depth control handwheel should be turned clockwise to its deepest position so that the stop does not restrict the implement depth setting. If weight transfer is desired, stop the tractor, shallow the depth control handwheel until the mechanical stop contacts the rockshaft cam, raise the implement land wheels, shallow the depth control handwheel by a further three full turns and continue work. The implement will then be set on the mechanical stop to the same depth as the previous implement land wheel setting.

Where ground conditions in the field vary between hard and soft, a depth wheel can be used to assist regular operation of the depth control. Set the implement to the desired depth, with the land wheel adjusted to turn lightly over the surface but not taking any weight.

When the softer areas are worked, the tractor rear wheels may sink considerably, so the depth wheel on the implement takes over the controlled setting until conditions harden again.

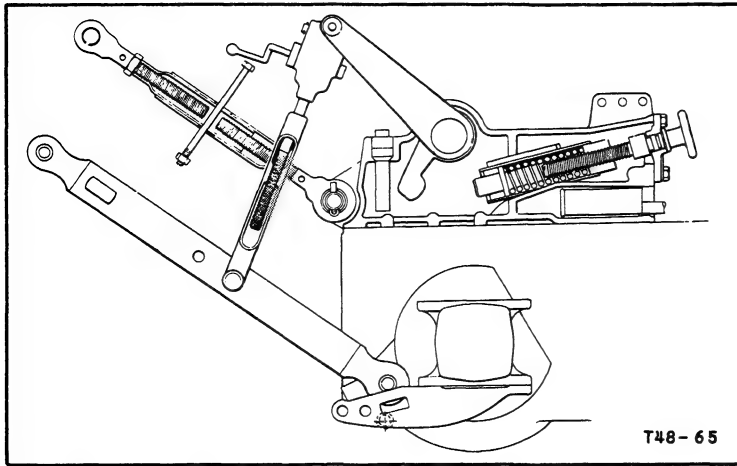
This is particularly useful with cultivating implements where a shallow working depth is required.

TO VARY THE PLOUGHING DEPTH

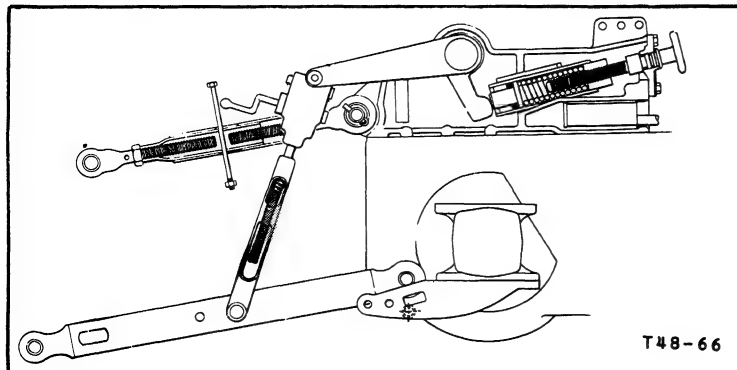
At working depth the weight of the implement is on the stop and until this weight is lifted away by raising the implement the depth control handwheel is not free to turn.

Stop the tractor, raise the implement on the hydraulics sufficient to allow free movement of the handwheel then turn the handwheel CLOCKWISE to deepen or ANTI-CLOCKWISE to shallow the setting. Lower the plough into work.

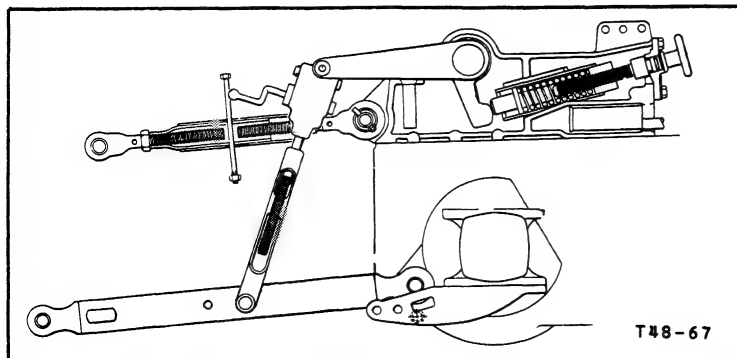
OPERATING THE MECHANICAL DEPTH CONTROL HYDRAULIC SYSTEM



Illust.21 Linkage raised in Hydraulic Cylinder
(Depth Handle wound to correct setting)



Illust.22 Linkage lowered, full weight of Implement on Mechanical Stop
(Spring compressed)



Illust.23 Tractor drop in relation to Implement
(Spring extends to maintain contact)

OPERATING THE MECHANICAL DEPTH CONTROL HYDRAULIC SYSTEM

For temporary shallowing, move the control lever through the "HOLD" position just into the "LIFT" position sufficient to raise the implement and shallow the work. Return the lever to the "HOLD" position immediately. The plough is then held on the hydraulic system. When normal depth of work is required, move the lever from the "HOLD" to the "LOWER" position.

HEADLAND ADJUSTMENT

When the headland is reached and the implement is raised, any adjustment then of the depth control handwheel will affect the depth of the work on the next run.

Should wheel spin occur during ploughing, improved traction can be obtained by gently moving the control lever to "LIFT". The further the lever is moved toward "LIFT" the greater the pressure that will be applied at the cylinder, and thereby to the tractor rear wheels, without noticeable change in ploughing depth.

Once the wheels have stopped spinning the lever should be returned to the lower position. It is only necessary to move the lever sufficiently to stop wheel spin. Any further movement merely brings the plough out of the ground.

In some hard soils penetration may be difficult. An indication of this is that the depth control handwheel feels free to turn in either direction when the implement is in work after being set to the required depth. Check the condition of shares and disc coulter settings.

UNHITCHING IMPLEMENT

When unhitching an implement after using the depth control, make sure that the lower links are free before pulling them off the implement hitch pins. It may be necessary to turn the depth control handwheel to a deeper setting to allow this.

NOTE: When the depth control stop is not used the handwheel should be turned to the deepest setting to prevent any implement being inadvertently lowered quickly onto the stop.

HEIGHT OF OUT OF GROUND EQUIPMENT

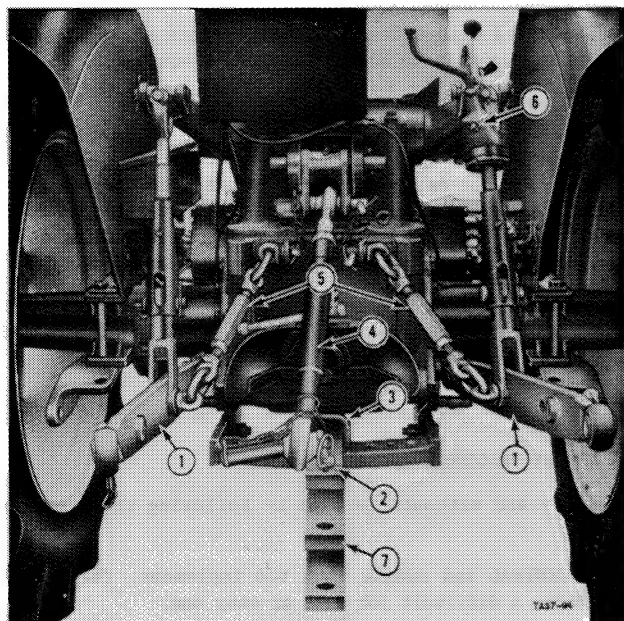
The handwheel can be used to set the height of an implement above ground for example: The B-23 Mower Frame.

CAUTION: Only light linkage equipment such as mowers may safely use the stop to carry their weight and set their working heights. NEVER USE THE DEPTH CONTROL STOP TO SUPPORT AND TRANSPORT HEAVY LINKAGE LOADS. Use the hydraulic "HOLD" position.

Having attached the mower to the linkage and coupled up the power take-off shaft, raise the mower approximately fifteen inches above the ground. Turn the handwheel until it contacts the rockshaft cam. Lower the mower fully onto the mechanical stop. The height of the breakaway support should then be twelve inches from the ground having loaded the compensating spring. At this height the frame is correctly set to allow the cutter bar maximum cutting capacity and will return to this setting after being lifted at any time.

Other light equipment may be attached and operated in a similar manner.

THREE POINT LINKAGE



1. Lower links
2. Swinging drawbar
3. Drawbar stop pin
4. Top link
5. Check chains
6. Levelling box
7. Drawbar clevis

Illust.24 Three Point Linkage (Travelling Position)

GENERAL

The three point linkage is available in dual category I and II, the top link being reversible and effective with both categories.

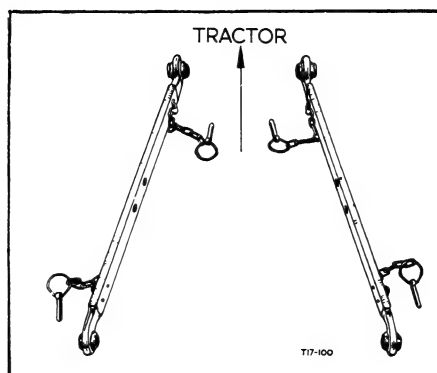
LOWER LINK HITCH POINTS

Two positions to which the lower links can be attached are provided. The upper pin should normally be used for three point linkage equipment, but improved penetration and lift height can be obtained when the lower pin position is used.

TO FIT CATEGORY I EQUIPMENT

The larger category II ball joints on the lower links must be attached to the category I tractor pins. A bush over the tractor pin is used to take up the variation in linkage ball bore diameter. Ensure that the lower link cotters at the category II end are facing inward prior to attaching lower links to the tractor pin (refer to illust.25).

Attach category II top link ball joint to the tractor bracket using the category II pin provided.



Illust.25 Lower Links

THREE POINT LINKAGE

Once the linkage is assembled with category II ball joints attached to the tractor the category I linkage is able to accept category I equipment.

TO FIT CATEGORY II EQUIPMENT

Reverse the lower links, fit the category I ball joints over the category I tractor pins, having first removed the bush. Place the bush over the pin on the outside of the category I lower link ball joint and push the attaching cotter through the bush and tractor pin. The bush is then being used as a spacer.

Attach the left and right hand lift rods (grease nipple to the rear) to the lower links. Reverse the top link putting the category I ball joints to the tractor bracket. Attach with the category I pin.

HITCHING THE IMPLEMENT TO THE TRACTOR

This can be done quickly and without exertion by following the procedure outlined below:-

1. Place the tractor CENTRAL and SQUARE with the implement. This is the essential point that can turn a difficult job into an easy one.
2. Attach the left hand lower link and retain with the implement cotter provided.
3. Attach the right hand lower link using the levelling box to raise or lower the link as required. Retain with the cotter.
4. Attach the top link to the implement using the turnbuckle adjustment to align the holes. Retain with the cotter provided.

When hitching a plough or out of ground implement, the lift rods should be fitted in their fixed positions. When hitching wide implements which require to remain level irrespective of the attitude of the tractor, i.e. cultivators, disc harrows etc., the lift rods must be fitted in the slotted position. This will then permit the tractor and implement to move laterally independently of each other.

NOTE: Hitching is made easy if the implement is left standing on level ground.

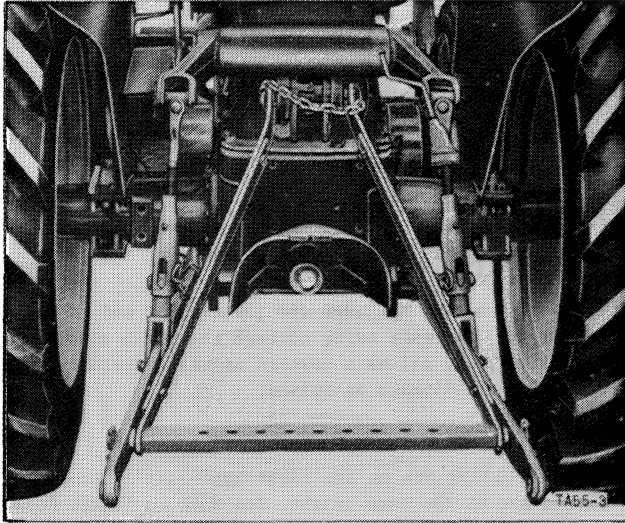
When the levelling box is adjusted to bring the lower links to the same height, the radial groove on the threads should just be showing. If it is not, then the left hand lift rod may be out of adjustment.

With the rigid left hand lift rod there should be 1 inch of thread showing when the two parts are screwed together. With the telescopic left hand lift rod the two parts should be screwed up to the shoulder and then unscrewed one turn.

SWINGING DRAWBAR

The swinging drawbar (2 Illust.24) is adjustable by bolting the drawbar clevis (7 Illust.24) above or below the drawbar. Attaching the implement to the drawbar or the clevis gives alternative implement hitching heights.

THREE POINT LINKAGE



Illust.26 Three Point Linkage Drawbar
("VARY TOUCH")

THREE POINT LINKAGE DRAWBAR

The drawbar can be mounted in the normal position on the ball ends of the lower links or in the specially provided bosses in the links (refer to Illust. 26). Mounting the drawbar in these bosses will give a drawbar distance of 14 inches from the end of the P.T.O. shaft when the stay rods are adjusted to their shortest. Attach the drawbar as follows:

1. Remove the top link.
2. Install the drawbar through the lower holes in the stay rods and through the lower links. Secure with spring cotters.
3. Install the stay rods onto the top link pin on standard tractors or onto the bellcrank pivot pin on "VARY TOUCH" tractors and secure with the spring cotters.
4. Set the stay rods to length and tighten the bolts.
5. On "VARY TOUCH" tractors the draft control handle must be set and the slide locked in the fully forward position. The position control handle must also be in a "lower" position unless required for use with remote cylinders as previously described.

NOTE: Ensure that both stay rods are set at the same length.

CAUTION: UNDER NO CIRCUMSTANCES SHOULD THE LINKAGE BE MOVED AFTER THE DRAWBAR STRUTS HAVE BEEN COUPLED UP.

CHECK CHAINS

GENERAL

Check chains are provided for three purposes:

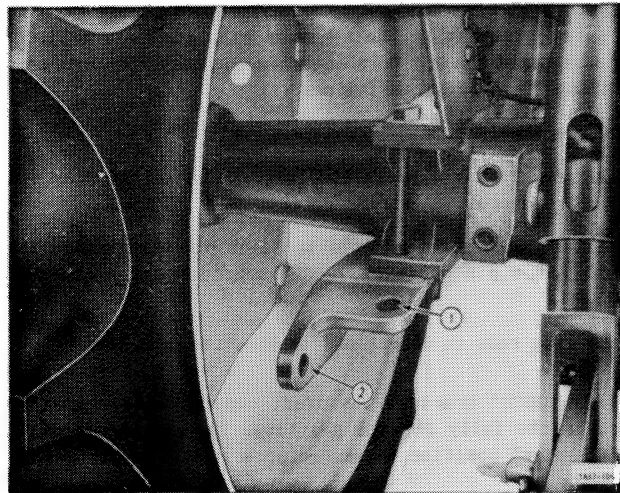
1. To prevent the lower links fouling the tyres (refer to Illust.24).
2. To allow implements to float sideways freely when in work but to tighten and prevent swing when the implement is lifted.
3. To hold equipment without swing when it is lifted or lowered.

"VARY TOUCH" HYDRAULIC SYSTEM

Two mounting positions are provided for the tractor end of the check chains. Position (1 Illust.27) prevents swing through the whole movement of the linkage. Position (2 Illust.27) allows a certain amount of swing in work with automatic tightening when the linkage is raised.

To adjust the check chains proceed as follows:-

1. Adjust the levelling box on the right hand lift rod until the free ends of the lower links are at the same height. See NOTE to "THREE POINT LINKAGE".
2. Set the lower link ends, measured between the inside edge of the balls, to 26-7/8 for category I and 32-7/16 for category II. A plough cross shaft can be used for this purpose.
3. Fit the check chains to the swing in work position (2 Illust.27) and adjust their length by turning the hexagon centre portion until the lower links have 1/4 inch sway each side of the centre line and the chains are of equal length.
4. Tighten the locknuts.



Illust.27 Check Chains Positions ("VARY TOUCH")

CHECK CHAINS

MECHANICAL DEPTH CONTROL

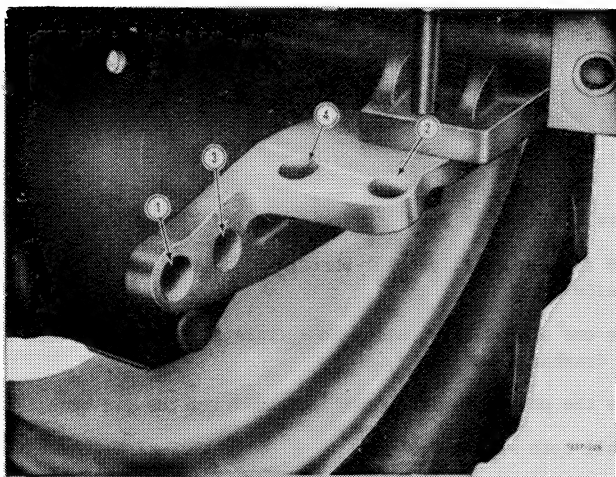
Four mounting positions are provided for the tractor end of the check chains (Illust.28). Two are used when implements are required to work without swing and two when freedom of swing in work with automatic tightening when the linkage is raised is required.

LOWER LINKS ON UPPER HITCH PINS

CATEGORY I IMPLEMENTS		CATEGORY II IMPLEMENTS	
Position 1	Swing in work	Position 3	Swing in work
Position 2	No swing	Position 4	No swing

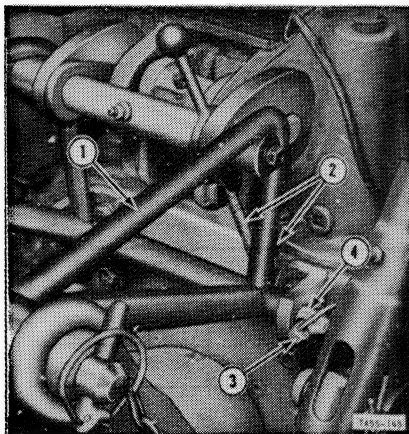
LOWER LINKS ON LOWER HITCH PINS

CATEGORY I IMPLEMENTS		CATEGORY II IMPLEMENTS	
Position 1	Swing in work	Position 3	Swing in work
DO NOT use Positions 2 and 4			



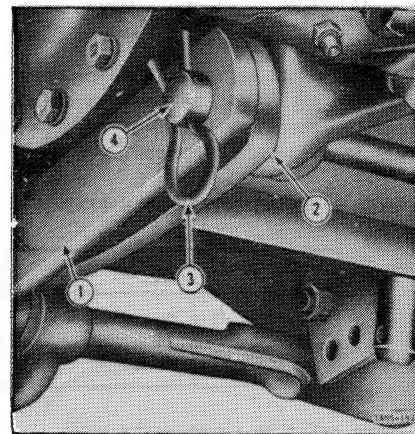
Illust.28 Check Chain Positions
(Mechanical Depth Control)

AUTOMATIC HITCH ("VARY-TOUCH")



- | | |
|-------------------|------------------|
| 1. Radius arm | 3. Spring cotter |
| 2. Tension spring | 4. Pivot pin |

Illust.29 Radius Arm Assembly



- | | |
|------------------|------------------|
| 1. Hook frame | 3. Spring cotter |
| 2. Drawbar frame | 4. Locating pin |

Illust.30 Installing the Trailer Hook

GENERAL

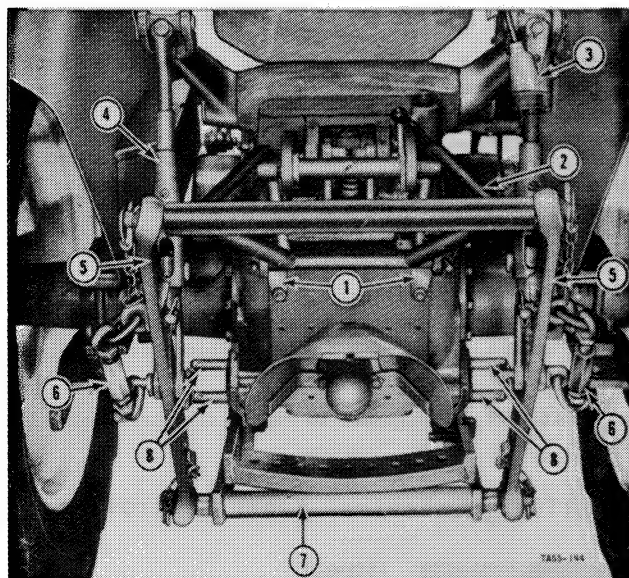
The attachment provides an automatic pickup for towing trailers or similar equipment.

It is operated by the position control lever and utilises the three point linkage. When the trailer hook has reached transporting position, the radius arm engages the bellcrank pivot shaft and the hitch is locked in this position (Illust.29).

ASSEMBLY

1. Remove the drawbar frame spring cotter (3 Illust.30).
2. Drive the pin (4 Illust.30) through until one end is flush with the drawbar frame side.
3. Place one arm of the trailer hook frame (1 Illust.30) onto the projecting end of the drawbar frame pin.
4. Raise the other arm into position and drive the pin back.
5. Install both spring cotters.
6. Install the left and right hand pivot brackets (1 Illust.31) securing with the two bolts.
7. Position the radius arm and install the pivot pin (4 Illust.29). Secure the pivot pin with the spring cotter (3 Illust.29).
8. Detach the lower link arms and bushes from the tractor hitch pins and position them on the trailer hook frame, securing with the spring cotters, refer to Illust.31.

AUTOMATIC HITCH ("VARY-TOUCH")



1. Pivot brackets
2. Radius arm
3. Levelling box
4. Lift rod
5. Lower links
6. Check chains
7. Hook frame
8. Tractor hitch pins

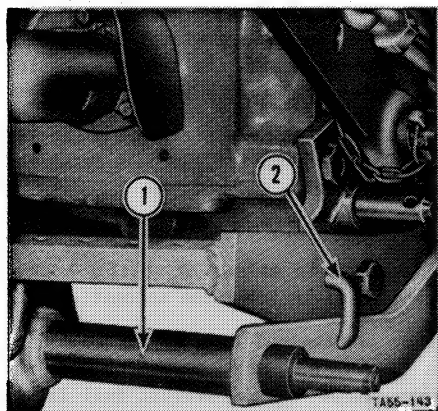
Illust.31 Automatic Hitch

9. Adjust the length of the left hand lift rod by screwing up to the shoulder and then unscrewing one turn.

10. Adjust the right hand lift rod on the levelling box up to the missing thread.

11. Unhook the radius latch and assemble the category I ends of the lower links to the radius arm pins. Secure with spring cotters.

12. Detach the check chains from the tractor hitch points and install onto the lower link.



Illust.32 Hook Frame Retaining Pin

OPERATION

1. Move the draft control lever to its most forward position and lock the slide.

2. Set the engine to run at half throttle.

3. Move the position control lever to lift and allow the hook to lift fully.

4. Return the position control lever to lower and check that both radius arm hooks automatically engage the bellcrank pivot shaft and that the radius arm lock plates engage fully.

AUTOMATIC HITCH ("VARY-TOUCH")

NOTE: Adjustment of the levelling lift rod may be necessary to achieve this.

5. To lower the automatic hitch, move the position control lever back to contact the fixed stop at the same time pushing the radius arm latch handle back to disengage the hooks from the pivot pin.

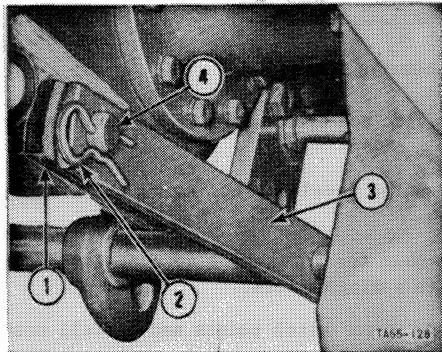
6. Return the position control lever to the fully forward position ensuring that the radius arm latch handle is pushed fully back until the latching hooks fully disengage the pivot pin.

THE RETAINING PIN

When not in use the trailer hook (1 Illust.32) is retained to the drawbar by a spring loaded pin (2 Illust.32) which engages a hole in the hook side frame. The pin should be turned upward when the automatic hitch is in use. Failure to do so will prevent the full lift of the hitch.

To use this automatic hitch it is necessary to remove the three point linkage and swinging drawbar.

AUTOMATIC HITCH (Mechanical Depth Control)



1. Drawbar frame
2. Spring cotter
3. Hook frame
4. Locating pin

Illust.33 Installing the Trailer Hook

ASSEMBLY

1. Remove the spring cotters (2 Illust.33).
2. Drive the pin (4 Illust.33) through until one end is flush with the drawbar frame side.
3. Place one arm of the trailer hook onto the projecting end of the drawbar frame pin.
4. Raise the other arm into position and drive the pin back.
5. Install both spring cotters.
6. Assemble the lift links to the lift arms with the implement cotters to the outside.
7. Attach the other end of the lift links to the trailer hook frame securing with the cotters.

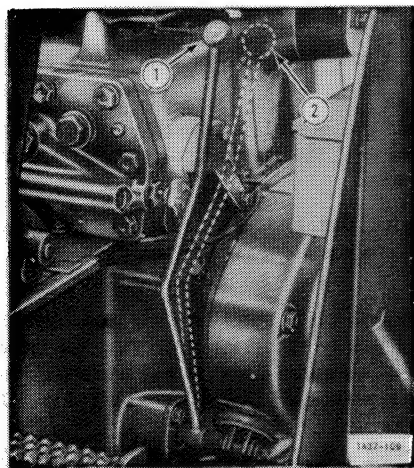
OPERATION

Screw the depth control handwheel CLOCKWISE to allow the trailer hook to lower fully. Use the main control lever to raise or lower the automatic hitch.

When not in use the trailer hook frame is retained by a spring loaded pin which engages a hole in the hook frame. The pin should be turned upwards when the automatic hitch is being used. Failure to do so will prevent full lift of the hitch.

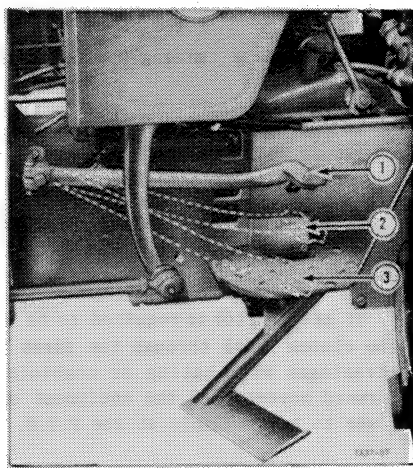
CAUTION: DO NOT move the tractor until the lift hook is fully raised.

POWER TAKE OFF ATTACHMENTS



1. P.T.O. disengaged
2. P.T.O. engaged

Illust.34 P.T.O. Operating Lever



1. Clutch fully engaged
2. First pressure transmission disengaged
3. Second pressure transmission and P.T.O. disengaged

Illust.35 Two Pressure Clutch Pedal

GENERAL

The following types of power take-off are available. Each type is equipped with a 1-3/8 inch standard spline power take-off shaft.

1. Single Speed Standard Transmission Power Take-Off giving 555 rev/min at 1 875 engine rev/min.

2. Single Speed Constant Running Power Take-Off giving either 555 or 698 rev/min at 1 875 engine rev/min.

3. Two-Speed Constant Running Power Take-Off giving either 555 and 698 rev/min or 555 and 1 042 rev/min at 1 875 engine rev/min.

OPERATING THE SINGLE SPEED STANDARD P.T.O.

CAUTION: Early models incorporated a lock out feature to prevent the P.T.O. being used with the high range of gears. On later machines the P.T.O. must NOT be used in the HIGH range of gears.

1. Disengage the engine clutch.
2. Ensure Hi-low shift lever is in LOW.
3. Move the P.T.O. lever to the engaged position (2 Illust.34).
4. Slowly release the engine clutch pedal.

Depressing the engine clutch pedal to stop the P.T.O. will also stop the tractor.

POWER TAKE OFF ATTACHMENTS

OPERATING THE CONSTANT RUNNING P.T.O.

The constant running P.T.O. is operated through the second pressure clutch stage.

To engage the P.T.O. depress the engine clutch fully through both pressures (3 Illust.35), move the P.T.O. lever rearward to the engaged position (2 Illust. 34) and slowly release the clutch pedal.

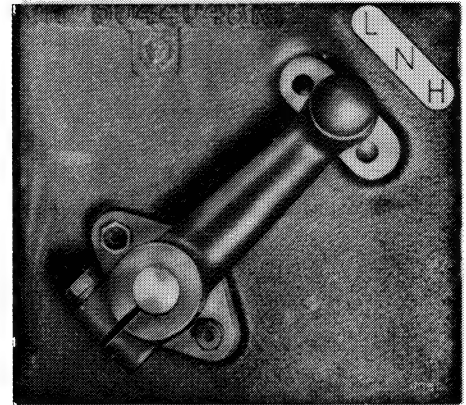
To disengage the P.T.O. depress the engine clutch pedal through both pressures move the P.T.O. lever forward to the disengaged position (1 Illust.34) and slowly release the clutch pedal.

If the tractor is required to be stopped and the P.T.O. left running, depress the clutch pedal through the first pressure only (2 Illust.35). This has great advantages when baling or combining where an extra load is encountered. The forward movement of the equipment can be arrested whilst still permitting full power to be available at the P.T.O.

OPERATING THE TWO SPEED CONSTANT RUNNING P.T.O.

To change from one speed to the other with the two speed P.T.O., the engine clutch pedal must be depressed fully through both pressures and the two speed power take-off operating lever (Illust.36) moved to the appropriate position (FORWARD for HIGH SPEED - REARWARD for LOW SPEED).

Engaging and disengaging the P.T.O. is the same as detailed for the single speed constant running P.T.O.



Illust.36 Two Speed P.T.O. Operating Lever

BELT PULLEY ATTACHMENT

The belt pulley is rear mounted and driven from the rear P.T.O. The pulley direction of rotation can be reversed by removing the attaching capscrews and turning the unit through 180°.

When the belt pulley has been mounted, fill the housing up to the level plug on the side, with oil of the same viscosity as used in the transmission. (Refer to the LUBRICATION GUIDE).

NOTE: To check the oil level the belt pulley must be on the right hand side.

When operating the belt pulley with the front of the tractor higher than the rear, it is important that the oil level in the transmission is up to the level plug. Top up if necessary. This EXCESS oil must be drained before the tractor is operated on level ground.

CAUTION: Working belts generate static electricity. On tractors equipped with pneumatic tyres attach a chain to the tractor and let the free end rest on the ground. This will allow the static to discharge harmlessly.

BELT PULLEY ATTACHMENT

OPERATION

The gear shift lever must be in the NEUTRAL position and the brake pedal locking lever engaged.

Depress the engine clutch, move the P.T.O. lever (Illust.34) rearward to the engaged position and slowly release the engine clutch.

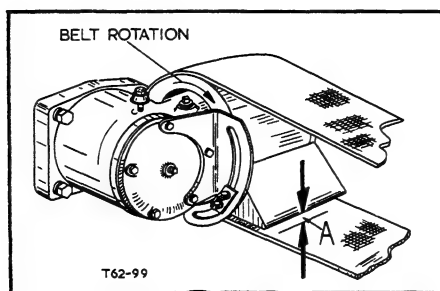
To stop the belt pulley, depress the engine clutch.

To disengage the belt pulley depress the engine clutch, move the P.T.O. operating lever to the disengaged position and release the engine clutch.

SAFETY SHIELD ADJUSTMENT

With the belt pulley stationary, the safety shield must be set close to the belt so that the dimensions "A" (Illust.37) is as small as possible when the belt is operating.

CAUTION: DO NOT ATTEMPT TO ADJUST THE SAFETY SHIELD WHILE THE BELT IS OPERATING.



Illust.37 Belt Pulley Safety Shield

WHEELS & WHEEL WEIGHTS

GENERAL

The tractor is designed to operate satisfactorily with a wide range of equipment over most normal conditions, without the need for water ballast or wheel weights. The weight distribution is excellent. Further improvement to traction results from the weight transfer system and the use of the differential lock.

When heavy linkage equipment is used, its weight can be counteracted by front end weights, front wheel weights or water ballast. Occasionally both water ballast and weight sets are required. The object of such weighting is to obtain normal and accurate steering with stability. Similarly, on hillside work front weight will often improve steering.

WHEELS & WHEEL WEIGHTS

For trailed equipment, e.g. trailer ploughs, four wheel trailers, harvester threshers etc. (work where linkage weight transfer is not used), the use of wheel weights, or water ballast for both front and rear wheels will improve traction and reduce wheel slip. Use only the minimum weight required for maximum assistance. Excessive weight can reduce the tractors performance and increase fuel consumption.

CAUTION: IF WEIGHT IS ADDED ENSURE THAT THE TYRE PRESSURES ARE ADJUSTED ACCORDINGLY.

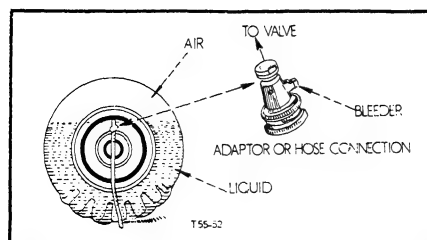
WATER BALLAST

Water ballast should be used with discrimination and should be unnecessary when operating with three point linkage and weight transfer or with the automatic hitch attachment.

Tractor tyres can be three quarters filled with liquid using clean water for temperatures above freezing point 0°C (32°F) or a calcium chloride solution for temperatures below freezing.

Calcium chloride solution is a 25% mixture which is approximately 20 lb of flaked calcium chloride to 8-1/2 imperial gallons of water. The strength of the solution can be checked with a hydrometer, a 25% solution has a specific gravity of 1.255 and a freezing point of -32°C (-25°F).

When preparing a calcium chloride solution always add the flakes to the water, NEVER ADD THE WATER TO THE FLAKES. Stir the mixture thoroughly and allow to cool before using.



Illust.38 Adding Water Ballast

FILLING WITH WATER BALLAST

Jack up the tractor and revolve the wheels so that the valve stem is at the top. Remove the valve core and screw on the adaptor (Illust.38). The adaptor is provided with a bleeder for releasing the air displaced by the liquid. Attach the hose to the adaptor.

The tyre can be filled from a tank, placed at least five feet higher than the tyre, a force pump, or by using compressed air and a pressure tank filled with liquid.

When the liquid level is as desired, remove the hose and adaptor then replace the valve core and inflate the tyre to the correct pressure.

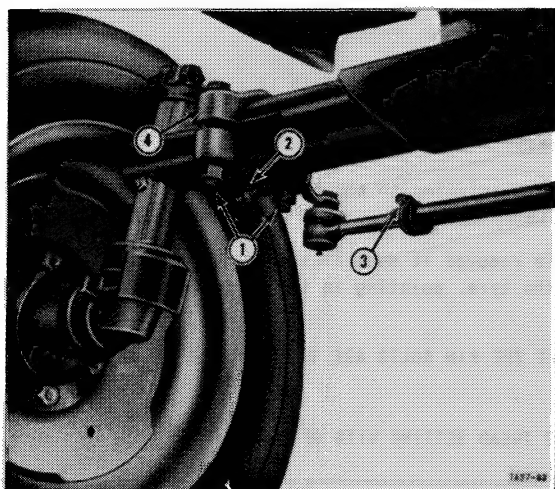
WHEEL TREAD ADJUSTMENT

GENERAL

Adjustment of the front axle extensions allows variation of the tread in 4 inch increments from 48 to 76 inches. To obtain the 72 inch setting the front axle extensions must be set at 64 inches and the wheel discs reversed. The 76 inch setting is obtained by reversing the wheel discs with the extensions set at 68 inches.

The axle can be off-set in 4 inch increments as required.

Milled in the track rod are adjustment grooves 4 inches apart, to correspond with axle settings. Whenever the axle extensions are altered the track rod must be reset.



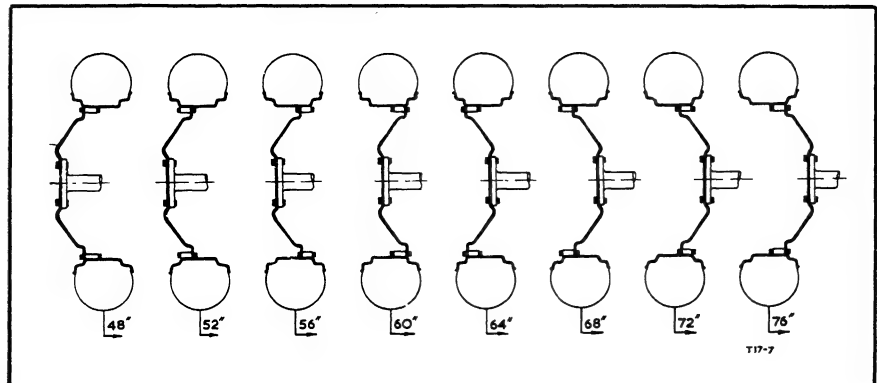
1. Extension clamp bolts
2. Clamp pin
3. Track rod pinch bolt
4. Extension clamp

Illust.39 Front Axle Adjustment

ADJUSTING THE FRONT WHEEL TREAD

1. Jack up the tractor so that the wheels are clear of the ground.
2. Loosen the two bolts (1 Illust.39) on each side
3. Pull out the cotter pins and remove the clamp pins (2 Illust.39).
4. Adjust axles and track rod to the required tread.
5. Replace the axle extension clamp pins and cotter pins, retighten the axle extension clamp bolts (1 Illust.39) to the specified torque. Re-tighten the track rod pinch bolts (3 Illust.39).

WHEEL TREAD ADJUSTMENT



Illust.40 Rear Wheel Settings with 11 x 28 Tyres

ADJUSTING THE REAR WHEEL TREAD

The rear wheel tread can be adjusted to the settings shown in the chart, by assembling the rear wheel rim in the various positions shown in Illust.40.

NOTE: When the rear wheel is removed it must always be replaced with the arrow mark, on the side wall of the tyre, pointing in the direction of forward rotation.

CAUTION: ALWAYS ENSURE THAT THE RIM BOLTS ARE TIGHT, REFER TO SPECIFICATIONS FOR BOLT TORQUES.

AVAILABLE TREAD SETTING WITH OPTIONAL TYRES

TYRE SIZE	TREAD SETTING	
	MINIMUM (in)	MAXIMUM (in)
10.00-28	48	76
11.00-28	48	76
11.00-28 Dual Wheels	48	80 (one setting)
11.00-32	48	76
11.00-38 Hi-Clear	50	74
12.00-28	56	76
13.00-24 Agricultural	52	76
13.00-24 Industrial	52	72
13.00-28	56	76

LUBRICANT SPECIFICATIONS

GENERAL

Oil has a limited working life after which the effects of time, condensation and, in the case of the engine, heat and by-products of combustion will combine to rapidly reduce its lubricating properties. It is therefore foolish to use a lubricant for more than the specified period. The intervals between lubricant changes detailed in this manual have been determined after prolonged tests and have been proved the most suitable for normal operation. In extremely arduous conditions, however, it may be necessary to reduce these periods and this point should be discussed with your International Harvester dealer.

DIESEL ENGINE LUBRICATION OIL SPECIFICATIONS

Engine oil (for use in the crankcase and air cleaner) should be a well refined petroleum oil free from water and sediment.

Heavy duty oils are additive type oils possessing the oxidation-stabilising, anti-corrosive and anti-sludging properties necessary to make them generally suitable for high speed diesel engines. They provide the most satisfactory lubrication and should be used in diesel engines with present day diesel fuels.

The quality of the base oil and the amount and type of additives used, determines their suitability for use in high speed diesel engines under severe operating conditions and also their suitability for use with diesel fuel containing sulphur or other injurious products.

NOTE: The term heavy duty as used here does not refer to the viscosity rating or "weight" of the oil.

RECOMMENDED ENGINE LUBRICATING OILS

DIESEL ENGINE

Oils having a minimum designation "For Service DM" and generally known in the trade as "Supplement 1" or "Supp.1" lubricating oils are considered suitable for use in the diesel engine.

In areas where the diesel fuel sulphur content is above 1%, Series III (MIL-L-45199) oils should be used.

No special procedure is required when Series III oils are used other than to run the engine in on an oil of lower additive level, (i.e. MIL-L-2104A).

PETROL ENGINE

Oils meeting the requirements of U.S. Military Specifications MIL-L-2104A or British Ministry of Defence Specification DEF-2101B are considered suitable for use in petrol engines.

SELECTING THE VISCOSITY OF THE ENGINE OIL

During cold weather, base the selection of oil on the coldest anticipated day temperature to make starting easier.

During hot weather the selection should be based on the highest anticipated day temperature.

LUBRICANT SPECIFICATIONS

When the prevailing temperature changes even though the regular intervals of lubrication have not been reached, the lubricant must be changed.

NOTE: IT is not necessary to change the lubricant when the temperature enters into a different range during a working day, unless difficulty in starting is experienced.

PRECAUTIONS

After changing the oil, operate the engine at low speed without load, for at least 5 minutes. This will allow the oil to work into the bearings and onto the cylinder walls.

HYDRAULIC OIL (HO)

This must be a good quality mineral oil blended specifically for hydraulic systems or diesel engines.

TRANSMISSION OIL

Mild type E.P. gear lubricant without special supplements (MOLYKOTE), or extreme pressure gear lubricant grade 134H E.P. IH Spec. B-22. Refer to the LUBRICATION GUIDE.

CHASSIS LUBRICANT (CL)

Lithium based grease is used as a pressure gun or lubricator grease at all temperatures and should conform to No.2 N.L.G.I. consistency.

LUBRICATION GUIDE

- E.O. (ENGINE OIL) - According to anticipated air temperatures at start and operating conditions. Refer to instructions under LUBRICANT SPECIFICATIONS.
- G.L. (GEAR LUBRICANT) - See NOTE (2):
- C.L. (CHASSIS LUBRICANT) - Lithium base grease to conform to No.2 N.L.G.I. consistency.
- H.O. (HYDRAULIC OIL)

APPLICATION	KEY	CAPACITY	ANTICIPATED MINIMUM AIR TEMPERATURE			
			ABOVE +90°F (+32°C)	32°F (0°C)	0.0°F (-18°C)	BELOW 0.0°F (-18°C)
CRANKCASE	E.O.	DIESEL 13 pts PETROL 9 pts				
AIR CLEANER	E.O.	1-1/4 pints	SAE 30	SAE 20	SAE 10W	See NOTE 1
GENERATOR	E.O.					
TRANSMISSION & DIFFERENTIAL	G.L.	32 pints				
POWER TAKE-OFF	G.L.	6 pints	SAE 90EP	SAE 80EP or SAE 90EP	See NOTE 4	See NOTE 3
GEARBOX	G.L.	1 pint (approx.)				
BELT PULLEY	G.L.					
STEERING GEAR	G.L.	2-1/4 pints (approx.)	SAE 90EP	SAE 90EP	SAE 90EP	SAE 90EP
HYDRAULIC SYSTEM	H.O.	20 pints	SAE 30	SAE 20	SAE 10W	See NOTE 1
LUBRICATION FITTINGS	C.L.		NLGI No.2	NLGI No.2	NLGI No.2	NLGI No.2

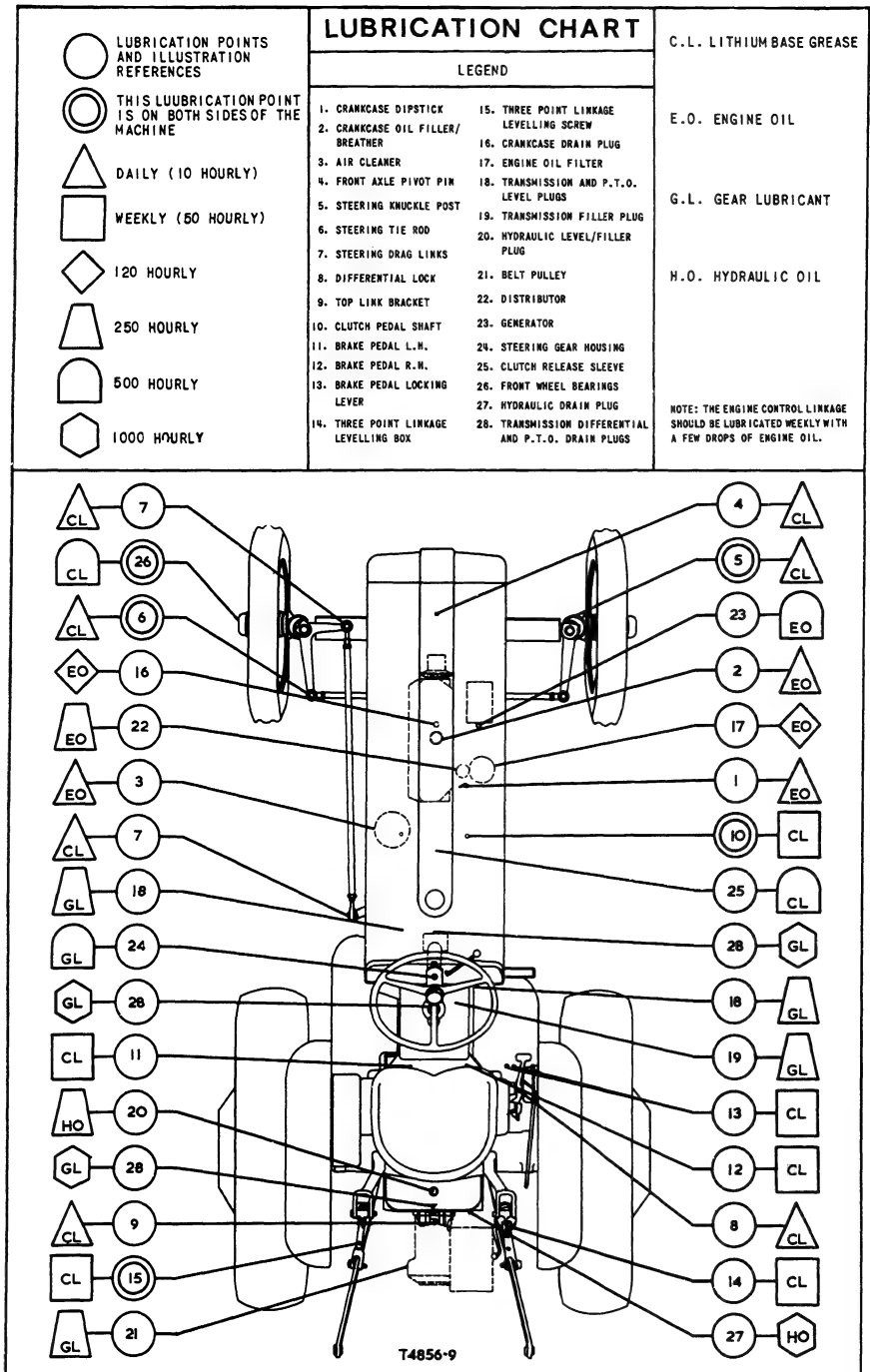
NOTE (1): Where temperatures are consistently below 0.0°F(-18°C) use an oil meeting the requirements of MIL-L-10295A or consult your lubricant supplier.

NOTE (2): MILD TYPE EP GEAR LUBRICANT WITHOUT SPECIAL SUPPLEMENTS (MOLYKOTE) OR EXTREME PRESSURE GEAR LUBRICANT GRADE 134H EP IH SPEC. B-22.

NOTE (3): Use an SAE 5W lubricant having mild EP or anti-wear additives (not MOLYKOTE). Consult the IH dealer in your locality for recommended grades.

NOTE (4): Use either HYTRAN or an SAE 10W lubricant having mild EP or anti-wear additives (not MOLYKOTE). Consult the IH dealer in your locality for recommended grades.

LUBRICATION CHART



LUBRICATION CHART

TRACTOR LUBRICATION POINTS

Points of lubrication are individually explained in the following text. They are identified by the item numbers corresponding with those listed on the LUBRICATION CHART.

NOTE: Double ringed items are on BOTH sides of the machine.

SERVICE AFTER EVERY 10 HOURS OF OPERATION

ITEM 1 CRANKCASE DIPSTICK

Check the level of the oil in the crankcase.

ITEM 2 CRANKCASE OIL FILLER/BREATHER

Top up as necessary with correct grade lubricant.

ITEM 3 AIR CLEANER

Service oil bath and element.

ITEM 4 FRONT AXLE PIVOT PIN

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 5 STEERING KNUCKLE POST

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 6 STEERING TIE ROD

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 7 STEERING DRAG LINK

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 8 DIFFERENTIAL LOCK

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt. Smear the differential lock lever cam plate with grease.

ITEM 9 TOP LINK BRACKETS

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

POWER STEERING CYLINDER (not illustrated)

Apply 2 or 3 strokes of the grease gun to each lubrication fitting.

LUBRICATION CHART

SERVICE AFTER EVERY 50 HOURS OF OPERATION

ITEM 10 CLUTCH PEDAL SHAFT

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 11 BRAKE PEDAL L.H.

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 12 BRAKE PEDAL R.H.

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 13 BRAKE PEDAL LOCKING LEVER

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 14 THREE POINT LINKAGE LEVELLING BOX

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 15 THREE POINT LINKAGE LEVELLING SCREW

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

SERVICE AFTER EVERY 120 HOURS OF OPERATION

ITEM 16 CRANKCASE DRAIN PLUG

Replace the engine oil.

ITEM 17 ENGINE OIL FILTER

Replace the filter element.

SERVICE AFTER EVERY 250 HOURS OF OPERATION

ITEM 18 TRANSMISSION AND P.T.O. CASE LEVEL PLUGS

Check the level of oil in the transmission and P.T.O. cases.

ITEM 19 TRANSMISSION FILLER PLUG

Top up the transmission and P.T.O. cases as necessary, using correct grade lubricant.

ITEM 20 HYDRAULIC LEVEL/FILLER PLUG

Check the level of oil and top up as necessary.

LUBRICATION CHART

ITEM 21 BELT PULLEY (if fitted)

Check the level of oil at the level plug and top up as necessary with the correct grade lubricant.

NOTE: The belt pulley must be fitted to the right hand side when checking the oil level.

ITEM 22 DISTRIBUTOR (Petrol)

Apply 2 or 3 drops of engine oil to the felt pad and the governor weight pivots.

SERVICE AFTER EVERY 500 HOURS OF OPERATION

ITEM 23 GENERATOR

Inject a few drops of engine oil through the hole in the end bracket onto the felt pad.

ITEM 24 STEERING GEAR HOUSING

Add oil through the filler plug as necessary.

ITEM 25 CLUTCH RELEASE SLEEVE

Apply 2 or 3 strokes of the grease gun or sufficient grease to flush out old grease and dirt.

ITEM 26 FRONT WHEEL BEARINGS

Replace the grease in the front wheel bearings.

SERVICE AFTER 1000 HOURS OF OPERATION

ITEM 27 HYDRAULIC DRAIN PLUG

Replace the oil in the hydraulic system.

NOTE: Mechanical Depth Control Hydraulic System should be drained by removing the suction filter.

ITEM 28 TRANSMISSION DIFFERENTIAL P.T.O. DRAIN PLUGS

Replace the oil in the transmission and P.T.O. cases.

GENERAL

Periodically lubricate brake pedal connections, governor control cross shaft bearings and connections, hood sheet pivots and latches, radiator shutter cable and seat hinges with engine oil.

COLD WEATHER PRECAUTIONS

FUEL SYSTEM

Fill the fuel tank at the end of each day's work. On diesel models, drain the water trap after filling the tank to reduce the possibility of condensation freezing in the water trap.

LUBRICATION

Lubricate the entire tractor with winter grade lubricants as detailed in the LUBRICATION GUIDE.

COOLING SYSTEM

To prevent the water in the cooling system freezing, anti-freeze solutions must be used.

Anti-freeze must be of an Ethanediol base with Sodium Benzoate/Sodium Nitrate inhibitors meeting the requirements of BSS.3151 1959 Type B used in accordance with the manufacturers recommendations.

The correct method is to mix the anti-freeze and water in a container first. If this is not possible, pour the anti-freeze into the radiator before the water. Start the engine immediately and warm up to operating temperature, as quickly as possible, to circulate and mix the anti-freeze and water.

If anti-freeze is not available, drain the system completely at the end of each day's work and close all drain cocks. Refill BEFORE starting the engine. This practice is NOT recommended, particularly in hard water areas, as excessive deposits can build up in the system.

BATTERY

The efficiency of a battery decreases sharply with lowering temperatures until it is practically nil at -40°F .

The following table shows the freezing point of electrolyte at various specific gravities and emphasises the importance of keeping the battery fully charged.

ELECTROLYTE S.G.	FREEZES AT	
	Centigrade	Fahrenheit
1.280	-68°	-90°
1.250	-51°	-60°
1.200	-26.7°	-16°
1.160	-20.6°	-5°
1.150	-17.2°	$+1^{\circ}$
1.100	-7.2°	$+19^{\circ}$
distilled water	0°	$+32^{\circ}$

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COLD WEATHER PRECAUTIONS

DO NOT attempt to start the engine if the battery has been chilled below -20°F the battery must be warmed first.

Immersion in warm water to within an inch or two of the top of the battery case is a satisfactory means of warming the battery. In extremely low temperatures remove the battery from the tractor and place it on wooden blocks in a warm place until required for use.

Check the specific gravity of the electrolyte at frequent intervals and keep it as fully charged as possible.

In freezing temperatures, distilled water should be added ONLY if the tractor is to be operated for several hours IMMEDIATELY afterward. This will ensure adequate mixing and prevent the distilled water freezing.

HOT WEATHER PRECAUTIONS

FUEL SYSTEM

Fill the tank at the end of each day's work to reduce condensation.

LUBRICATION

Lubricate the entire tractor with correct grade lubricants as detailed in the LUBRICATION GUIDE.

COOLING SYSTEM

Check the coolant level frequently and top up as necessary.

Be sure that the radiator filler cap is in good condition and is tightened down correctly.

Check the fan belt tension at frequent intervals.

Clean and flush the cooling system every 6 months or 1000 hours of operation whichever is the shorter.

ROUTINE SERVICING SCHEDULE

● Check at periods shown or more frequently if conditions make this necessary		(DAILY) 10 Hrs	(WEEKLY) 50 Hrs	120 Hrs	250 Hrs	500 Hrs	1000 Hrs	PERIODICALLY
ENGINE	- Check oil level Change oil Change oil filter element Clean the crankcase breather Torque cylinder head nuts Check valve clearance	●		●				●
AIR CLEANER	- Clean the pre-cleaner (if fitted) Check oil cup and element Check air cleaner connections Remove and clean air cleaner	●	●	●				●
FUEL SYSTEM	- Fill the fuel tank Check water level in water trap (Diesel) Change fuel filter element (Diesel) Clean lift pump gauze filter	●				●	●	
P.T.O. TRANS MISSION & DIFFERENTIAL	- Check oil level Change oil				●		●	
COOLING SYSTEM	- Check coolant level Flush coolant system Clean radiator core Check fan belt tension	●					●	●
HYDRAULIC SYSTEM	- Check oil level Change oil and clean filters		●		●		●	
ELECTRICAL SYSTEM	- BATTERY Clean terminals Check electrolyte level		●					●
	GENERATOR Lubricate Check brushes Check generator drive belt tension Oil distributor Check points for wear, set gap Check spark plug gap		●		●		●	●
TYRES	- Check pressure		●					
BRAKES	- Check pedal free movement							●
ENGINE CLUTCH	- Check pedal free movement							●
LUBRICATION FITTINGS	- See LUBRICATION CHART							

M A I N T E N A N C E

COOLING SYSTEM

GENERAL

The pressurized cooling system will not operate correctly unless the system is free from leaks and pressure maintained. The filler cap must be properly tightened and the gasket and relief valve in good condition. Damaged hoses or loose connections will cause loss of coolant and subsequent overheating.

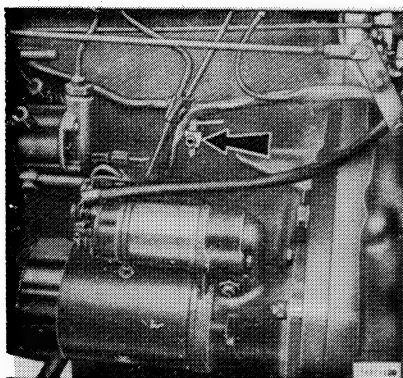
REMOVING THE RADIATOR CAP

The radiator cap is provided with a safety stop. Always turn the cap anti-clockwise to the stop and allow pressure to escape BEFORE depressing and removing the cap.

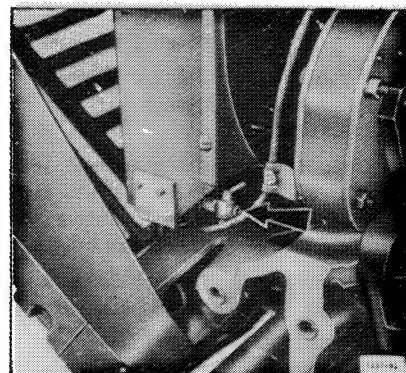
DO NOT attempt to repair any fault in the cap, replace the faulty one with a new one of the same pressure rating.

DRAINING

Start the engine and warm up to operating temperature. Stop the engine and carefully remove the filler cap. Open the crankcase drain tap (Illust.41) and the radiator drain tap (Illust.42) to allow the coolant to drain as quickly as possible while any sediment is in suspension.



Illust.41 Crankcase Drain Tap



Illust.42 Radiator Drain Tap

FLUSHING

The cooling system should be flushed every 1000 hours of operation or 6 months whichever is the shorter.

Flush thoroughly until clear water flows from the drain points.

Cleaning solutions are available for removing rust, scale, sludge and grease from the system. Each solution must be used according to the manufacturers recommendations.

FILLING

Ensure that the drain points are closed and refill the system with coolant to a level just below the filler cap neck.

COOLING SYSTEM

Start the engine and run at half throttle for approximately fifteen minutes. Stop the engine and top up to just below the filler cap neck. Replace the cap and tighten securely.

ADDING COOLANT TO AN OVERHEATED SYSTEM

CAREFULLY turn the filler cap to the safety stop to allow steam to escape, then remove the cap. Start the engine and run at low idle. Pour coolant SLOWLY into the system to the correct level. Replace the filler cap securely.

CLEANING THE RADIATOR CORE

Engine overheating is often caused by clogged or bent radiator fins. Blow insects etc., from the radiator air passages using air under pressure.

Apply the pressure jet in the OPPOSITE direction to that of the normal air flow through the radiator, i.e. from the rear of the radiator.

Straighten any bent fins taking care not to damage the tubes or break the bond between the fins and tubes.

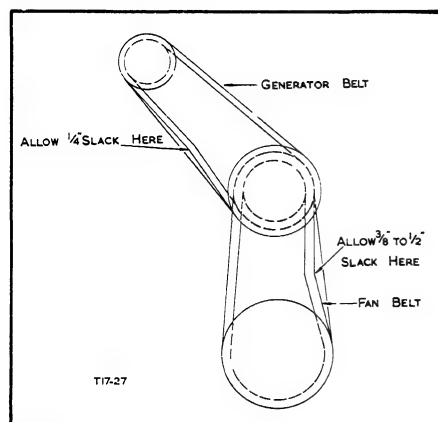
RUST PREVENTION

In localities where alkaline, acid or saline water is prevalent, the addition of a rust preventative or inhibitor will minimise the corrosive action of such water.

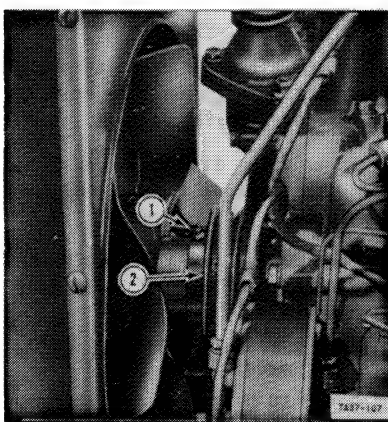
For rust prevention in cold weather conditions, add an inhibitor to the anti-freeze solution. Replenish the inhibitor after draining the anti-freeze for warmer temperatures.

FAN BELT

Incorrect belt tension results in rapid wear. The tension is correct when the belt can be depressed without effort by thumb, $3/8$ to $1/2$ inch midway between the two pulleys (Illust.43).



Illust.43 Fan Belt Tension



Illust.44 Fan Belt Adjustment

COOLING SYSTEM

FAN BELT ADJUSTMENT

1. Turn the fan until the setscrew (1 Illust.44) can be reached and loosen the setscrew.
2. Screw the flange (2 Illust.44) toward the belt to tighten or away from the belt to loosen.
3. When the tension is correct lock the flange by means of the setscrew making sure the setscrew is located in the nearest slot in the pulley hub.

FAN BELT REPLACEMENT

1. Loosen the setscrew (1 Illust.44) and screw the flange (2 Illust.44) as far from the belt as possible.
2. Ease the belt off the crankshaft pulley.
3. Remove the belt over the fan blades.
4. To replace the fan belt reverse the procedure outlined above.
5. Set the belt tension as detailed in "FAN BELT ADJUSTMENT" and check for correct tension after 20 hours running time.

AIR CLEANING SYSTEM

GENERAL

Clean air for combustion is assured by a three stage, oil bath type air cleaner. A centrifugal device in the pre-cleaner prevents large particles from entering the air cleaner.

The air then passes down a central tube and through a bath of oil.

As the air rises to the intake manifold it is drawn through a series of screens which remove any remaining dust. As oil from the screens works back to the bath, it carries the dirt with it, which settles at the bottom of the oil cup.

Never allow dirt to build up more than 1/4 inch deep in the cup. To prevent any dirt entering the engine, frequently inspect all hoses for condition, and connections for tightness.

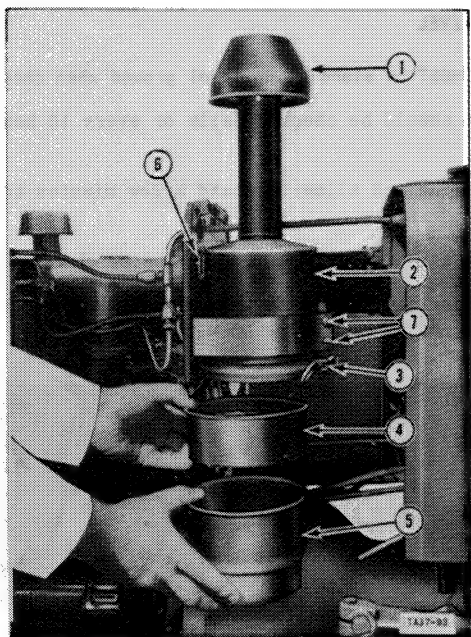
CAUTION: NEVER OPERATE THE ENGINE WITH THE AIR CLEANER REMOVED, DISMANTLED OR DISCONNECTED FROM THE INTAKE MANIFOLD.

OIL CUP SERVICING

Every 10 hours, or more frequently if conditions warrant it, remove, clean and refill the oil cup as follows :-

1. Clean away any accumulated dirt then slacken the clamp screw (3 Illust. 45).

AIR CLEANING SYSTEM



Illust.45 Air Cleaner Dismantled

2. Withdraw the oil cup (5 Illust.45) and thoroughly clean it.
 3. Fill the oil cup to the oil level mark with the same viscosity oil as used in the engine crankcase.
 4. Withdraw the removable element (4 Illust.45).
 5. Soak the element in a kerosene bath to free the collected dirt.
 6. Shake or blow dry with an air hose.
- NOTE: DO NOT ATTEMPT to wipe the dirt from the element with cloth.
7. Install the element and oil cup.

CLEANING THE AIR CLEANER BODY

After every 50 hours of operation or more frequently in extremely dusty conditions, remove the oil cup and element as previously described.

Remove the air pre-cleaner (1 Illust.45), remove the air cleaner body (2 Illust.45) by just slackening the hose clip (6 Illust.45) and working the hose off the air cleaner body. Slacken the two securing screws (7 Illust.45) on the air cleaner support brace and remove the air cleaner body.

Thoroughly wash all parts in clean kerosene or solvent.

Install the air cleaner body to the support brace in the reverse order to removal, ensuring that all connections are tight. Refill the oil cup to the level mark and install the element and cup making sure that the joint is air-

NOTE: DO NOT start the engine while the air cleaner is disconnected or the oil cup removed.

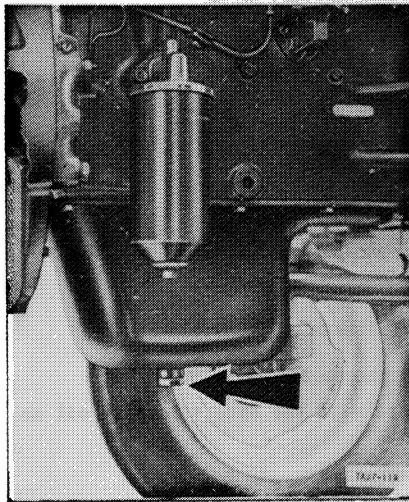
ENGINE MAINTENANCE

CHECKING THE OIL LEVEL

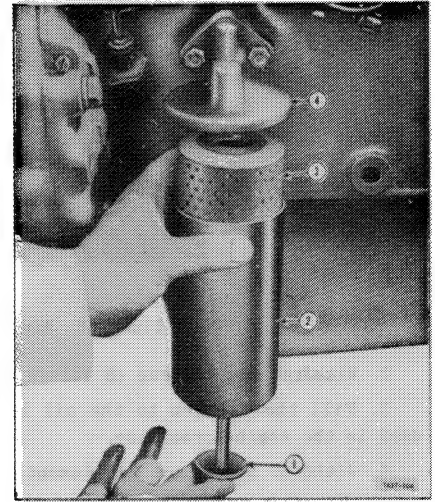
NOTE: The tractor **MUST** be standing on level ground when checking the oil level.

The engine oil should be checked daily or every 10 hours of operation as follows :-

1. Stop the engine and allow to stand a few minutes to permit the oil to drain into the crankcase.
2. Withdraw the dipstick (1 Illust.46) and wipe clean.
3. Insert the dipstick fully home then withdraw and check the level. Add oil through the filler cap as necessary. **DO NOT OVERFILL.**



Illust.46 Crankcase Drain Plug



Illust.47 Oil Filter Replacement

OIL AND FILTER REPLACEMENT

After the first 25 hours and thereafter every 120 hours of operation the crankcase must be drained and the filter element changed as follows :-

1. Run the engine until normal operating temperature is reached. Stop the engine and remove the drain plug (Illust.46).
2. Thoroughly clean the outside of the filter.
3. Unscrew the retaining bolt (1 Illust.47) and lift off the case (2 Illust.47) and element (3 Illust.47).
4. Remove and discard the element and clean out the case and filter head.
5. Place a new element in the case ensuring all seals are correctly positioned.

ENGINE MAINTENANCE

6. Assemble the case and element to the filter head (4 Illust.47) with the sealing ring between the case and head and tighten the retaining bolt.

7. Replace the crankcase drain plug, remove the crankcase breather/filler cap and pour in 13 pints of the correct grade oil for the diesel engine or 9 pints for the petrol engine.

8. Run the engine to circulate the oil, check that the oil pressure indicator registers, or that the oil pressure warning light goes out and check the oil filter assembly for leaks.

9. Stop the engine, allow to stand for some minutes, then check the oil level and top up as necessary.

CRANKCASE BREATHER/FILLER CAP

The crankcase breather is of the dry type. The elements may be washed in clean solvent provided they are undamaged. Every 120 hours of operation at the same time as the oil and filter element change, the breather should be cleaned as follows:-

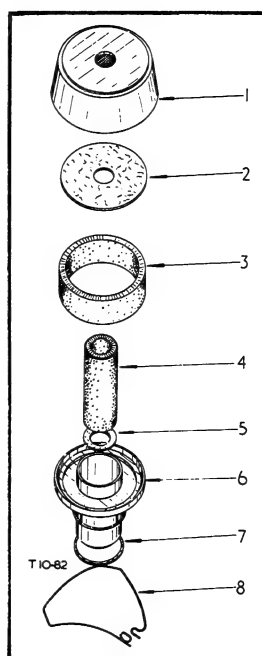
1. Remove the retaining clip (8 Illust.48), then large element and felt seal (3 & 2 Illust.48), element and felt seal (4 & 5 Illust.48) from the centre tube (6 Illust.48).

2. Thoroughly clean all components and ensure that the sealing washer (7 Illust.48) is in position and in good condition.

3. Install the small felt washer in the centre tube and the large felt washer in the cap using "PERMALOID 30" adhesive.

4. Slide the small element into the centre tube and position the large element on the tube flange.

5. Place the cap over the element and secure with the retaining clip.



Illust.48 Crankcase Breather

CYLINDER HEAD BOLTS

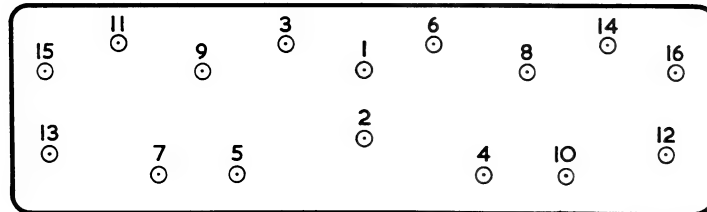
The cylinder head bolts must be torqued up after the first 25 hours operation of a new engine or 25 hours operation after installing a new gasket.

To avoid distortion of the cylinder head and to ensure even pressure on the cylinder head gasket, it is essential that the cylinder head bolts are tightened evenly, progressively and in the correct sequence as shown in Illust.49.

Tighten each bolt a fraction of a turn in the sequence shown until a final even torque of 75 to 85 lb ft is obtained.

NOTE: Be sure to check the valve clearance after tightening the cylinder head bolts.

ENGINE MAINTENANCE



T70-58

Illust.49 Cylinder Head Bolt Tightening
Sequence

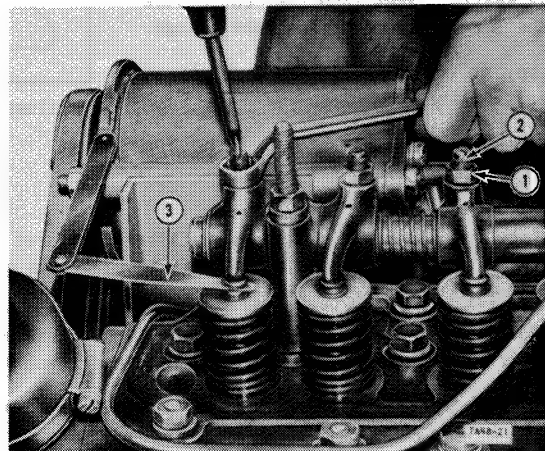
ADJUSTING THE VALVE CLEARANCE

The valve clearance should be adjusted with the valve closed and the engine warm. Loosen the locknut (1 Illust.50) and adjust the screw (2 Illust.50) on each valve lever until a .020 inch feeler gauge will slip snugly between the valve lever pad and the end of the valve stem. Tighten the locknut.

Remove the valve housing cover and adjust the valves in the following order:

Set No.8 valve fully open	Adjust No.1
Set No.6 " " "	" No.3
Set No.4 " " "	" No.5
Set No.7 " " "	" No.2
Set No.1 " " "	" No.8
Set No.3 " " "	" No.6
Set No.5 " " "	" No.4
Set No.2 " " "	" No.7

Replace the valve housing cover ensuring that the gasket is in position and making an oil tight seal. Use a new gasket if necessary.



Illust.50 Adjusting the Valve Clearance

DIESEL FUEL SYSTEM

DIESEL FUEL STORAGE

A storage tank provides the best means of keeping diesel fuel clean. A typical tank is shown in Illust.51. Mount the tank to give a fall of at least 1/4 inch per foot away from the draw-off valve (7 Illust.51). Drain any sediment and water from the drain valve (4 Illust.51) before each new delivery of fuel.

If it is necessary to store fuel in drums, these should be kept in a clean, dry storage place, on a concrete floor. Draw off the fuel by pump if possible, but DO NOT use the last three inches to avoid inclusion of sediment.

If a tap is used, the drum should be mounted on a trestle, with a fall of at least 1/2 inch per foot away from the tap. NEVER tip the drum to use fuel below the level of the tap.

Any spilt fuel should be wiped away immediately as diesel fuel does not evaporate and will collect dust.

Always replace the filler cap after use.

THE WATER TRAP

The water trap should be drained daily or more frequently if conditions warrant it. Open the drain tap (1 Illust.8) and allow to drain until fuel free from water is flowing.

INJECTION PUMP AND INJECTORS

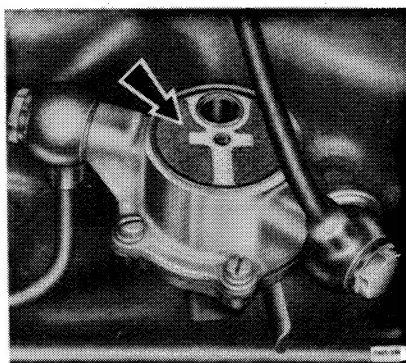
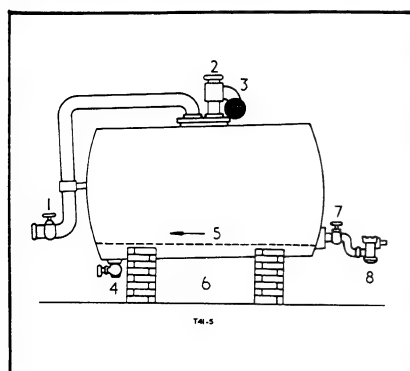
The fuel injection pump and injectors are manufactured to extremely fine limits and thus fuel CLEANLINESS IS ALL-IMPORTANT.

Apart from the instructions contained in these pages, all maintenance and adjustments must be carried out by your INTERNATIONAL HARVESTER dealer.

FUEL LIFT PUMP

The fuel lift pump ensures an adequate supply of fuel to the injection pump.

Every 500 hours of operation remove the cover and gauze strainer (1 Illust. 52) and clean the gauze strainer in paraffin using a soft brush. Install the



Illust.51 Typical Storage Tank

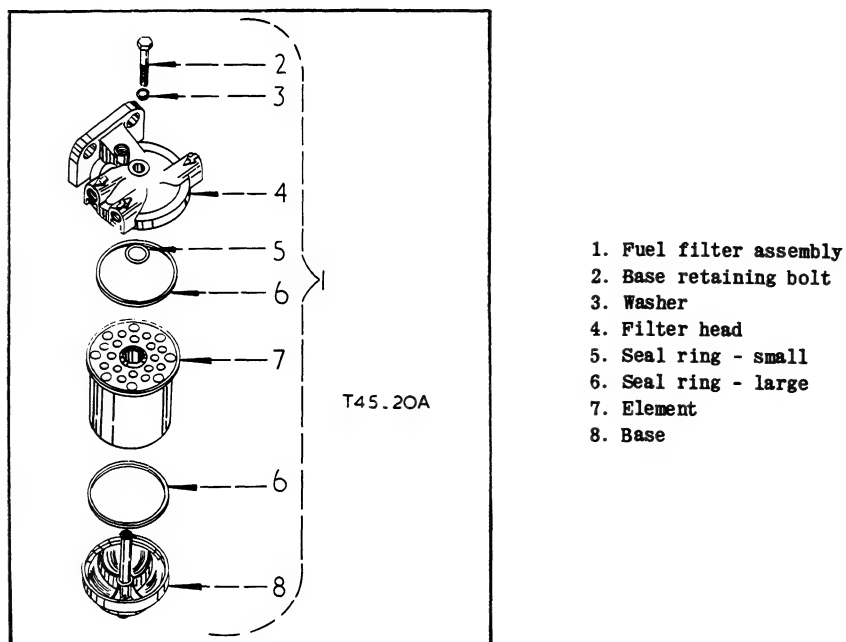
DIESEL FUEL SYSTEM

gauze and cover then vent the fuel system.

FUEL FILTER

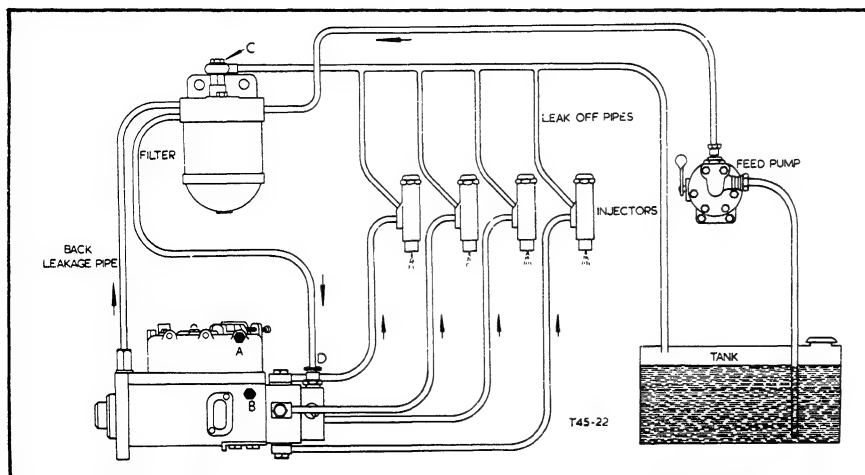
Every 500 hours of operation or more frequently if conditions warrant it, the fuel filter element must be changed as follows :-

1. Close the fuel shut-off valve (2 Illust.8).
 2. Thoroughly clean the outside of the filter case and base to prevent dirt entering the system.
 3. Remove the base retaining bolt (2 Illust.53) and lift the base (8 Illust. 53) and element (7 Illust.53) from the filter head (4 Illust.53). Discard the element.
 4. Place the lower seal ring (6 Illust.53) into the groove in the filter base and the element over the base spigot with the end with the small neck to-ward the top of the filter.
 5. Install the small seal ring (5 Illust.53) and upper seal ring (6 Illust. 53) in the grooves in the filter head.
- NOTE:** Care should be taken that these two seals are correctly positioned before installing the filter element.
6. Position the element and base under the filter head and secure with the retaining bolt and washer (3 Illust.53).
 7. Vent the fuel system as detailed under "VENTING THE FUEL SYSTEM".



Illust.53 Fuel Filter Assembly

DIESEL FUEL SYSTEM



Illust. 54 Venting a Typical Fuel System

VENTING THE SYSTEM

After removal of any part of the fuel system, or if the fuel tank has been allowed to run dry, it will be necessary to "VENT" the system as follows :-

1. Make sure there is an adequate supply of fuel in the tank, that the fuel shut-off valve (2 Illust.8) is open and that the engine stop control is pushed fully "IN".
2. Loosen the banjo bolt (C Illust.54) of the spill pipe connection on top of the fuel filter.
3. Operate the hand priming lever at the fuel lift pump until fuel, free from air bubbles flows, then tighten the bolt while fuel is still flowing.
4. Loosen the inlet pipe (D Illust.54) at the injection pump and repeat operation 3.
5. Loosen the lower vent screw (B Illust.54) on the pump body and repeat operation 3.
6. Loosen the upper vent screw (A Illust.54) on the pump body and repeat operation 3.
7. Repeat operations 5 and 6.
8. Turn the engine one half revolution then repeat operation 5 to ensure complete scavenging of the fuel transfer pump.
9. Set the throttle lever to the FULLY OPEN position then slacken all the unions at the injectors.
10. Turn the engine a few times on the starter motor then tighten the injector unions.
11. Start the engine. If it runs unevenly, slacken No.1 injector union for a few seconds then re-tighten. Repeat with the other injector unions in turn.

PETROL FUEL SYSTEM

THE FUEL LIFT PUMP

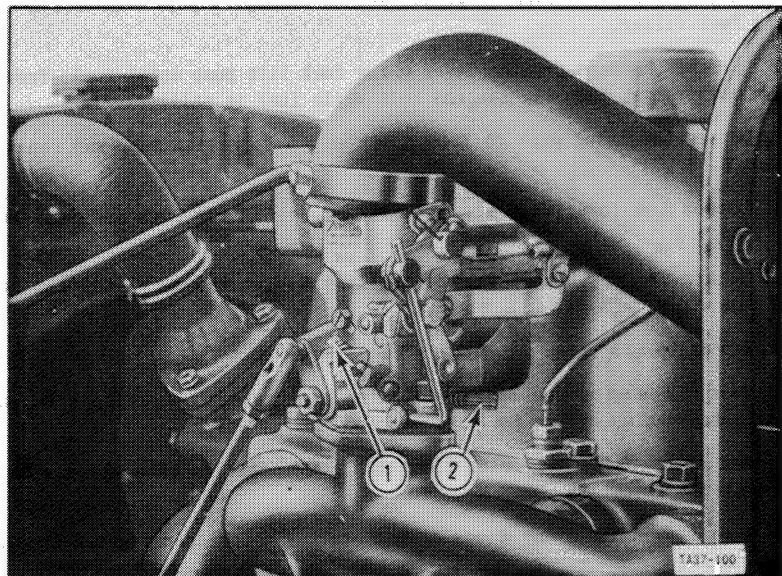
The fuel lift pump is common to both petrol and diesel fuel systems.

THE CARBURETTOR

The only maintenance that should be necessary on the carburettor is the adjustment of the low idling setting and occasional light lubrication of the linkage.

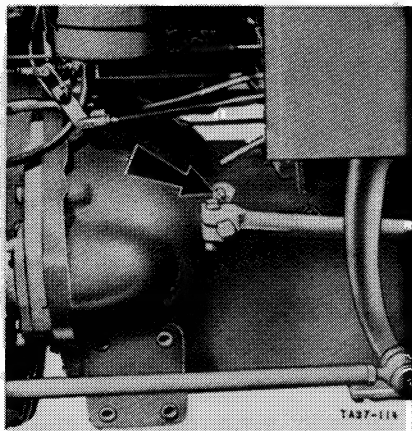
Adjust the low idle setting as follows :-

1. With the engine running and at normal operating temperature, adjust the throttle stop screw (1 Illust.55) to give a slight increase in engine speed.
2. Turn the volume control screw (2 Illust.55) IN or OUT to give the smoothest idling with the highest speed.
3. Re-adjust the throttle stop screw to give the required idling speed.

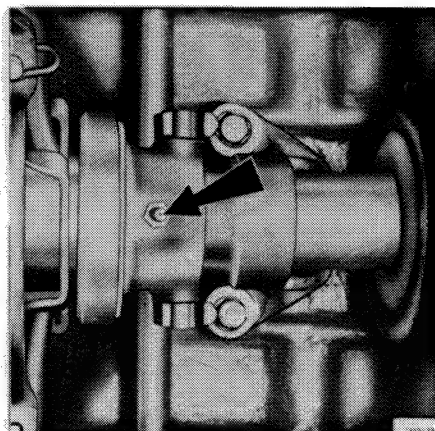


Illust.55 Carburettor Adjustment

ENGINE CLUTCH



Illust.56 Clutch Pedal Shaft Grease Points



Illust.57 Clutch Release Sleeve Grease Point

LUBRICATION

Every 50 hours operation grease the clutch pedal shaft at the grease points (Illust.56). Use only sufficient grease to flush out old grease and dirt.

After 500 hours operation remove the access plate on the underside of the clutch housing and grease the clutch release sleeve (Illust.57). Use only sufficient grease to flush out the old grease and dirt.

NOTE: DO NOT over lubricate

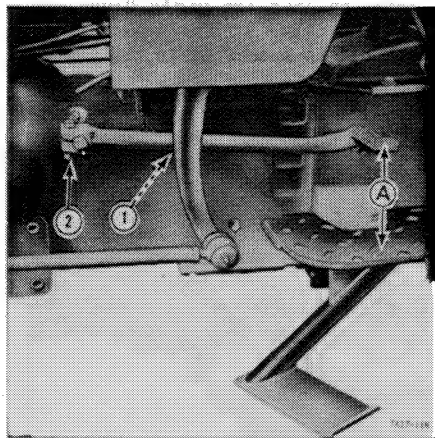
CLUTCH ADJUSTMENT

The dimension "A" Illust.58 between the pedal pad and the foot-plate should be maintained at 7 inches for the Standard and Dual clutch or 5-13/16 inches for the Heavy Duty Clutch. Obtain this measurement by adjusting the setscrew (1 Illust.58).

With the clutch fully engaged the Standard and Dual Clutch should have a free movement of 7/8 inch and the Heavy Duty Clutch should have 1-7/8 inch measured at the pedal pad.

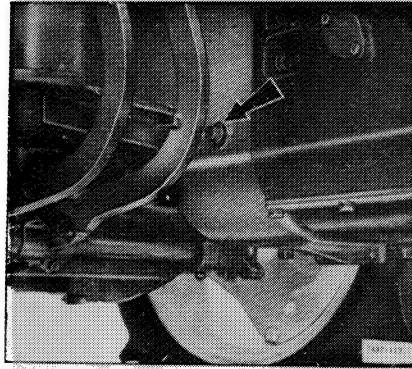
To adjust the free movement loosen the pinch bolts (2 Illust.58) and move the pedal round the clutch release shaft until the required free movement is obtained.

NOTE: Ensure that the pinch bolts are torqued up to 50 lb ft.

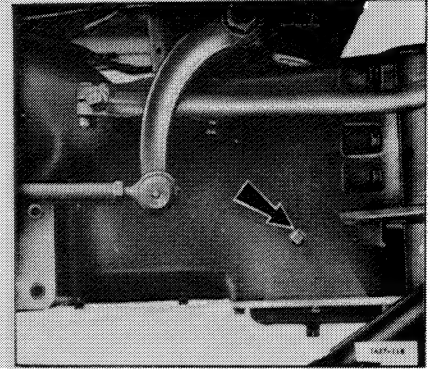


Illust.58 Clutch Pedal Adjustment

TRANSMISSION



Illust. 59 Transmission Case Level Plug

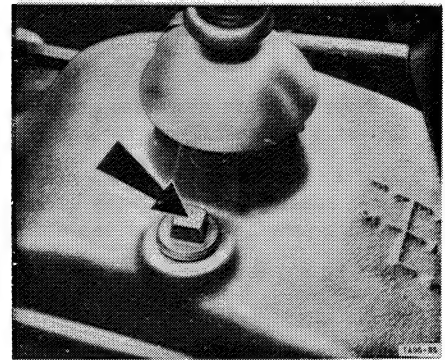


Illust. 60 P.T.O. Case Level Plug

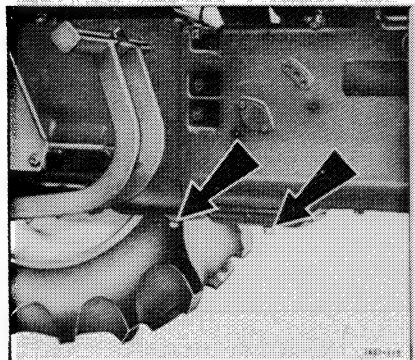
TRANSMISSION OIL

Every 250 hours of operation remove the transmission case level plug (Illust. 59) and the P.T.O. level plug (Illust. 60) if a P.T.O. is fitted and check the oil level of the transmission oil. Top up as necessary with the correct grade oil through the filler plug (Illust. 61).

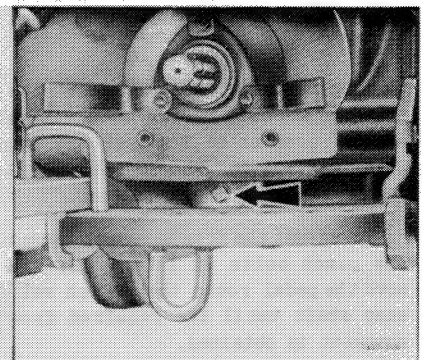
Every 1,000 hours of operation, remove the three drain plugs (Illust. 62 & 63), the filler plug and the level plugs, and drain the oil from the transmission and P.T.O. cases. Replace the drain plugs and fill the cases to the level plugs with oil as specified in the LUBRICATION GUIDE.



Illust. 61 Transmission Oil Filler Plug



Illust. 62 P.T.O. and Front Transmission Drain Plugs



Illust. 63 Rear Transmission Drain Plug

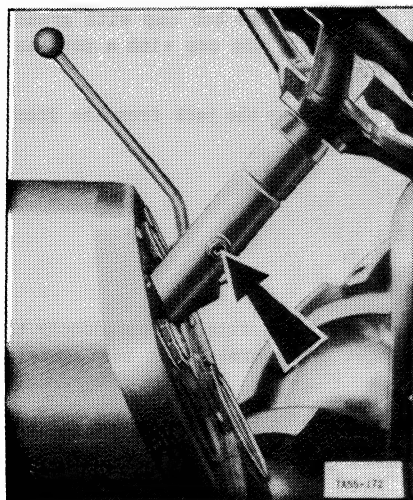
AXLES, WHEELS AND STEERING

GENERAL

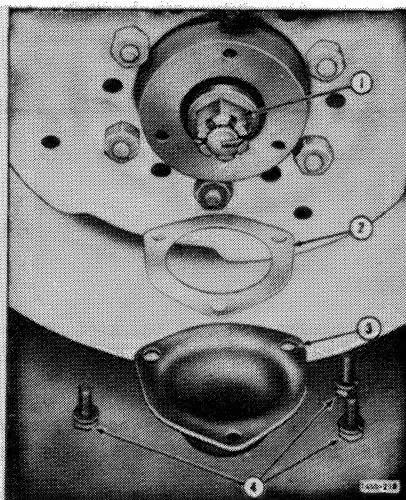
Refer to the LUBRICATION CHART for the location and frequency of greasing steering linkage etc.

STEERING GEAR HOUSING

Every 500 hours of operation remove the oil filler plug in the steering column (Illust.64) and inject several squirts of oil.



Illust.64 Steering Gear Filler Plug



Illust.65 Front Wheel
(hub cap removed)

THE FRONT WHEELS

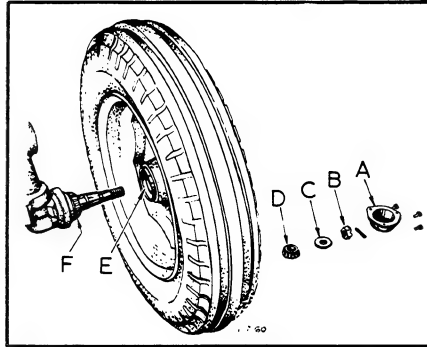
The front wheels are mounted on taper roller bearings adjusted by means of castellated nuts on the stub axle. Every 500 hours of operation the front wheels should be removed, the bearings repacked with grease and the wheels refitted as follows :-

1. Jack up the front axle until the front wheels are clear of the ground.
2. Remove the three hub cap bolts (4 Illust.65), hub cap (3 Illust.65) and gasket (2 Illust.65).
3. Remove the cotter pin and castellated nut (1 Illust.65).
4. Remove the outer bearing retainer (C Illust.66), outer bearing (D Illust.66) and remove the wheel complete with hub.
5. Remove all traces of old lubricant and thoroughly pack the bearing cones with correct grade of grease.

NOTE: DO NOT fill the wheel hub with grease.

6. Position the wheel on the steering axle stub shaft and install the outer bearing cone, bearing retainer washer and castellated nut.

AXLES, WHEELS AND STEERING



Illust.66 Front Wheel Servicing

7. Tighten the nut to a torque of 50 lb ft while the wheel is being revolved. This ensures that the bearing is seated evenly.

8. The nut should be slackened off to the first pin hole at which the washer is free to move. Lock the nut with the cotter pin.

9. Pack the hub cap with grease and install the cap with a new gasket.

10. Remove the jack from the front axle.

BRAKES

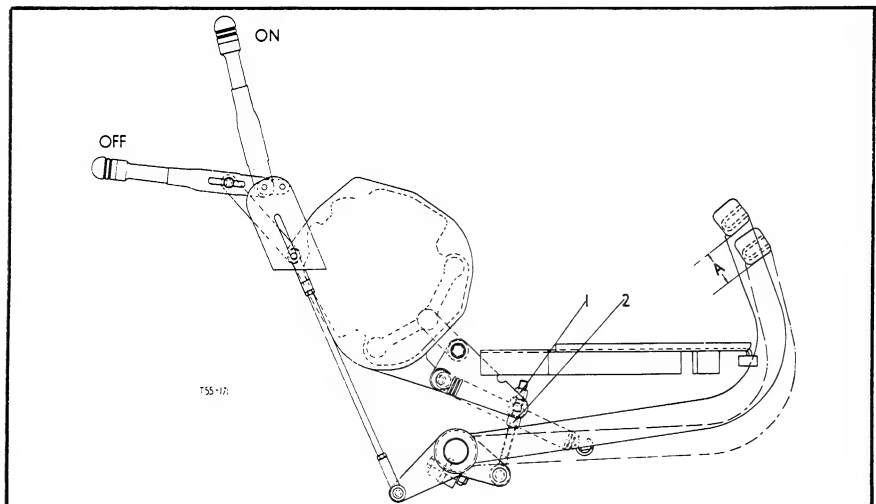
GENERAL

The brakes are foot operated disc type and may be operated independently to assist in making sharp turns, or locked together to brake both rear wheels simultaneously for road work.

The brake linkage must be lubricated after every 50 hours operation and the brakes adjusted to maintain 1-3/4 inches free movement measured at the pedal pad.

Refer to the LUBRICATION CHART for location of lubrication points.

NOTE: Inspect the brake linkage at regular intervals, when adjusting the brakes ensure that all pins and cotters are in good condition and that the brake linkage is functioning correctly.



Illust.67 Disc Brake Assembly

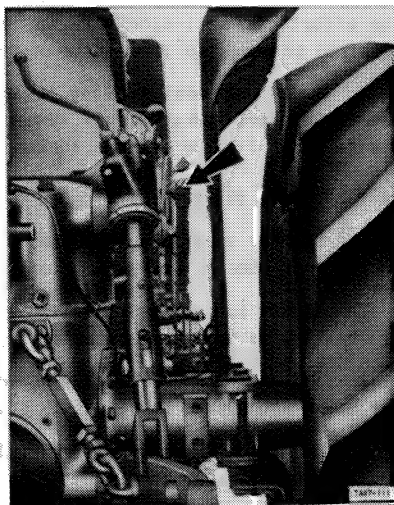
BRAKES

ADJUSTMENT

Brakes should not drag nor have excessive free movement at the pedals before they react. The correct pedal free movement is 1-3/4 inches (A Illust. 67) measured at the pedal pad.

Adjust the brakes as follows :-

1. Slacken the two nuts (1 & 2 Illust. 67) on the operating rod and adjust the nuts until the required free travel is obtained.
2. Re-tighten the two nuts.
3. Proceed as above for the opposite brake.



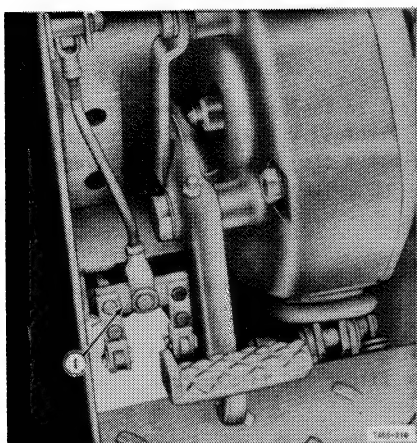
Illust. 68 Brake Pedal Locking Lever
(Standard)

BRAKE PEDAL LOCKING LEVER (Standard Type)

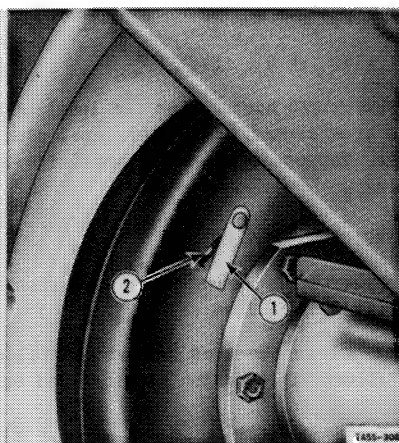
This lever is of the over-centre type acting on the brake pedal linkage.

To obtain the correct setting proceed as follows:-

1. Move the lever to the "OFF" position.
2. Screw the knurled dome of the lever (Illust. 68) clockwise, to increase



Illust. 69 Parking Brake Equalising Beam



Illust. 70 Ratchet Adjuster

BRAKES

the effort, or anti-clockwise to reduce the effort until a pull of 70 lb is required to move the lever over-centre.

NOTE: The brake pedal locking lever adjustment must be carried out after the footbrakes have been adjusted. Under normal operating conditions the footbrakes should be applied before the locking lever is moved over-centre.

PARKING BRAKE (Highway Version)

The highway version employs cable operated expanding drum type parking brakes on the rear wheels, independent of the footbrakes.

The system is designed to give maximum compensation when the equalising beam (Illust.69) is in a horizontal attitude.

When adjustment on the knurled dome of the hand lever is no longer obtainable the brake shoes must be re-set as follows :-

1. Ensure the hand lever is in the "OFF" position, block the front wheels and jack up the rear wheels.

Open the backplate cover (1 Illust.70) to allow access to the ratchet adjuster (2 Illust.70).

3. Expand the brake shoes by means of the adjuster until the wheel cannot be rotated.

4. Turn back the adjuster approximately 12 clicks and check that the wheel is free to rotate.

5. Repeat on the other wheel, lower the wheels to the ground and check that the hand lever setting is correct.

HYDRAULIC SYSTEM

CHECKING THE OIL LEVEL

Every 250 hours check the level of the oil in the hydraulic reservoir. Clean the area around the filler/level plug (1 Illust.71 or 72) before removing the plug. Top up as necessary until the oil reaches the bottom of the filler plug hole.

CHANGING THE OIL

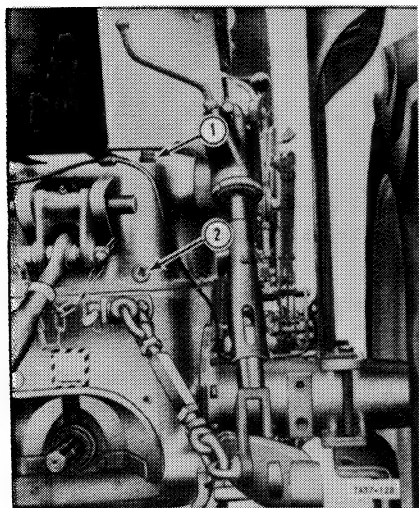
Every 1 000 hours the system should be drained, filters cleaned and system refilled as follows :-

1. Clean the area around the filler plug (1 Illust.71 or 72), drain plug (2 Illust.71), suction strainer and orifice filter (12 Illust.12).

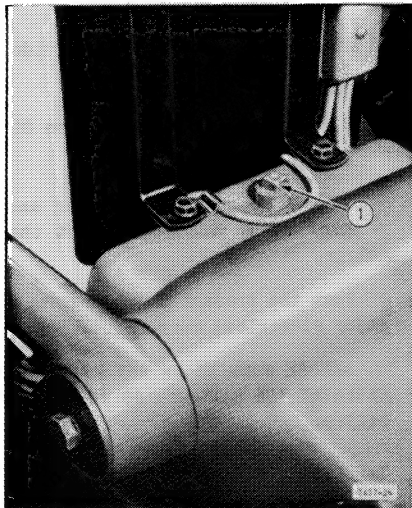
2. "VARY TOUCH"

Remove the filler and drain plug and allow the oil to drain into a suitable container.

HYDRAULIC SYSTEM



Illust.71 Hydraulic Filler & Drain Plugs
("VARY TOUCH")



Illust.72 Hydraulic Filler Plug
(MECHANICAL DEPTH CONTROL)

2a. MECHANICAL DEPTH CONTROL

Slacken the jubilee clip on the hose to suction strainer, push the hose forward onto the suction pipe and allow the oil to drain into a suitable container.

3. Grip the suction filter stub pipe as near the filter body as possible and pull the suction filter from the hydraulic reservoir.

4. Clean the filter with a soft brush in clean diesel fuel, and blow dry with compressed air.

5. Remove the orifice filter ("VARY TOUCH" only), clean or renew then replace.

6. Install the suction filter and connect up the suction line.

7. Install the drain plug ("VARY TOUCH" only).

8. Refill the reservoir with clean oil, level with the bottom of the filler plug threads.

9. Run the engine for approximately one minute; this will expel air from the system and allow the reservoir to be filled to capacity.

10. Replace the filler plug.

CAUTION: If additional hydraulic cylinders are attached to the tractor (e.g. Hydraulic Loader etc.) DO NOT fill the reservoir with the cylinders extended.

ELECTRICAL SYSTEM

GENERAL

The electrical system is divided into three circuits :

1. The Charging Circuit
2. The Starting and Ignition Circuits
3. The Lighting Circuit

To ensure ease of starting and efficient operation, particularly in cold weather it is essential that the battery be maintained in a full state of charge.

When the tractor is undergoing a major overhaul, it is advisable to have the major electrical components checked.

BEFORE WORKING ON ANY PART OF THE ELECTRICAL SYSTEM, DISCONNECT THE EARTH CABLE AT THE BATTERY. DO NOT RECONNECT UNTIL ALL ELECTRICAL WORK HAS BEEN COMPLETED.

THE FUSE

The fuse protecting the lighting circuit is mounted in a waterproof holder on the instrument panel.

A blown fuse will be indicated by failure of the tractor lighting system and can be confirmed by examination of the fuse itself. Before replacing a blown fuse inspect the wiring of the lighting circuit for evidence of a short circuit or any other fault which may have caused the fuse to blow.

If no fault can be found and another fuse blows, consult your INTERNATIONAL HARVESTER dealer.

THE CONTROL BOX

This unit controls the output of the generator according to the state of charge of the battery. The control box is a sealed unit and must NOT be tampered with.

BATTERY

CLEANING AND SERVICING THE BATTERY

Inspect the terminal post for corrosion and dirt. Clean with filler caps in position. The battery top may be cleaned with a solution of baking soda in water and a stiff bristle brush. Rinse the battery top with clean water and dry thoroughly.

Ensure that the vent holes in the filler caps are open.

LIQUID LEVEL

Check the level of the electrolyte in each cell weekly or more frequently in hot weather. The level should be $\frac{3}{8}$ inch above the plates. Add distilled water to maintain this level.

Distilled water should be stored in a glass stoppered jar and NEVER in a metal container.

The addition of special "dopes", solutions or powders to a battery may be harmful, and in any case cancels the warranty of the battery.

BATTERY

Acid or electrolyte must NEVER be added to the battery except by a skilled batteryman.

CAUTION: STORAGE BATTERIES GIVE OFF HIGHLY INFLAMMABLE HYDROGEN GAS WHILE CHARGING AND FOR SOME TIME AFTERWARD. DO NOT ALLOW A SPARK OR NAKED FLAME NEAR THE BATTERIES.

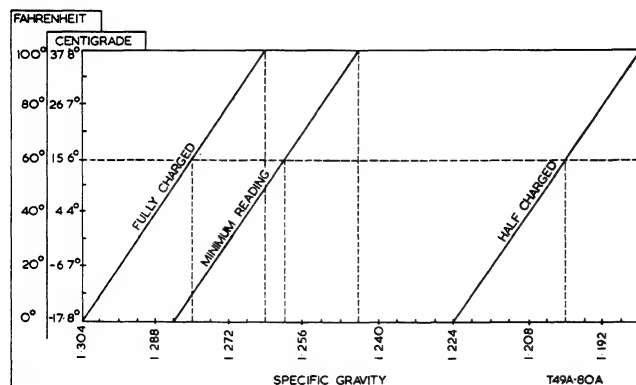
Be careful not to spill electrolyte on hands or clothing.

SPECIFIC GRAVITY OF ELECTROLYTE

The specific gravity of the electrolyte indicates the state of charge of the battery and thus its ability to crank the engine.

The specific gravity will vary with temperature but a reading of 1.260 at 60°F should be maintained.

The graph gives a quick reference for the state of charge of the battery for any ELECTROLYTE temperature between 0°F and 100°F.



For example: a hydrometer reading of 1.264 would indicate that the battery is LOW if the temperature is below 48°F; SATISFACTORY if the temperature is above 48°F and FULLY CHARGED if the temperature is 100°F. For temperatures beyond the range of the chart ADD .002 for every 5°F below 0°F then read from the graph at the 100°F and 0°F lines respectively.

Specific gravity must not vary more than .025 between cells.

NOTE: NEVER take specific gravity readings IMMEDIATELY after topping up with distilled water.

EFFECT OF LOW TEMPERATURE ON THE BATTERY

Refer to section on "COLD WEATHER PRECAUTIONS".

INSTALLING THE BATTERY

When installing the battery make sure that the earth cable is connected to the positive (+) terminal.

CAUTION: BEFORE WORKING ON ANY PART OF THE ELECTRICAL SYSTEM DISCONNECT THE BATTERY EARTH CABLE.

THE GENERATOR

GENERAL

The generator working in conjunction with the control box, replaces energy removed from the battery by the starter motor and lights.

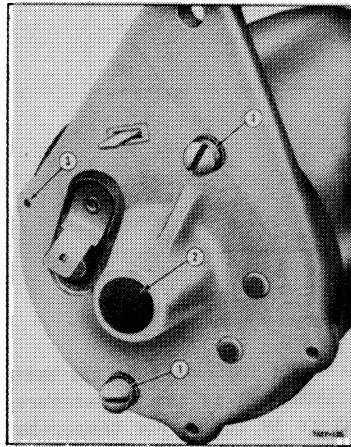
LUBRICATION

Every 500 hours of operation remove the rubber plug (2 Illust.73) and lubricate the rear bearing through the hole provided, with a few drops of engine oil.

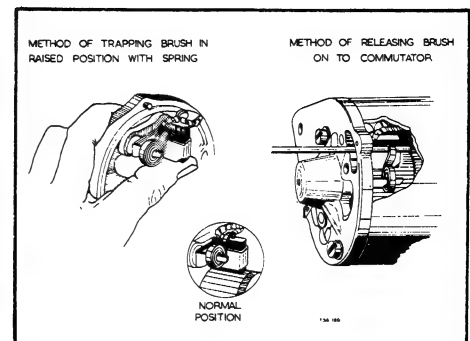
COMMUTATOR

The commutator should be clean, free from oil or dirt and should have a polished but not "glazed" appearance. Clean the commutator by rotating the shaft by hand against a dry cloth, or if very dirty, a carbon tetrachloride soaked cloth. Access to the commutator is gained by removing the generator end bracket.

CAUTION: Carbon tetrachloride fumes are highly toxic especially in the proximity of heat. DO NOT smoke while using it and keep the area well ventilated.



Illust.73 Generator End Bracket



Illust.74 Generator Brush Gear

BRUSH GEAR

To check the brushes for ease of movement in the holders, remove the generator from the engine and remove the two through bolts (1 Illust.73) to remove the generator end bracket. If the brushes are tight, ease the springs to one side and remove the brushes. Lightly file the sides of the brushes with a smooth file until the brush is free to move in its holder.

To assemble the generator end bracket to the generator, trap each brush in the raised position with the springs as shown in Illust.74. Slide the end bracket over the commutator and release the brushes when the end bracket is approximately 1/2 inch from the generator casing. Ensure that the pin (3 Illust.73) is properly located and secure with the two through bolts. Check that the generator rotates freely.

THE GENERATOR

GENERATOR BELT TENSION

The generator belt tension is correct when the belt can be depressed, without effort by the thumb approximately 1/4 inch midway between the two pulleys (Illust.43).

GENERATOR BELT ADJUSTMENT

1. Loosen the generator brace bolts (1 & 2 Illust.75) and the generator pivot bolt (3 Illust.75).

2. Move the generator away from the engine to tighten and towards the engine to slacken the belt as required.

3. When the correct tension has been obtained, tighten the generator brace and pivot bolts.

GENERATOR BELT REPLACEMENT

1. Remove the fan belt from the fan pulley as detailed in "COOLING SYSTEM".

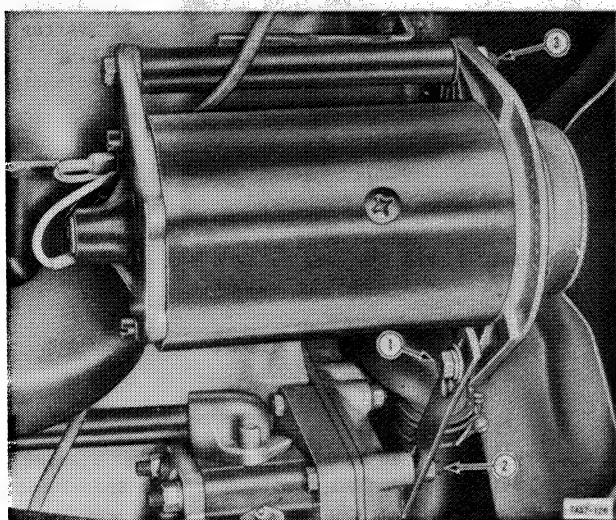
2. Loosen the generator brace and pivot bolts and remove the generator belt from the generator belt pulleys.

3. Work the generator belt through the fan belt and over the fan blades.

4. Work the new belt over the fan through the fan belt and onto the generator belt pulleys.

5. Install and adjust the fan belt.

6. Adjust the tension of the generator belt and tighten the generator brace and pivot bolts.



Illust. 75 Generator Belt Adjustment

THE STARTING MOTOR

THE STARTING MOTOR

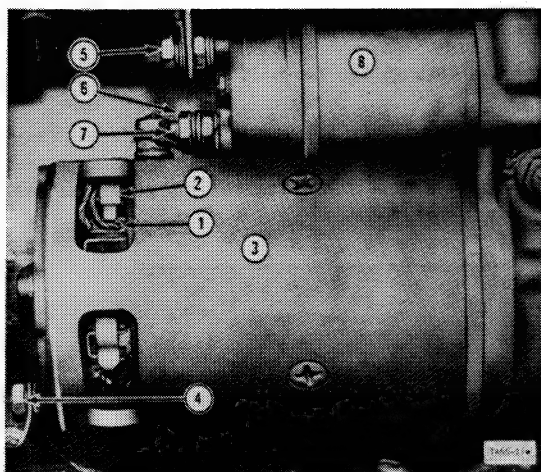
The starting motor is solenoid engaged when the keyswitch is turned to the fully clockwise position.

To inspect the commutator and brush gear, remove the metal band around the starting motor body. Check that the brushes move freely in their holders by holding back the tension spring (Illust.76) and PULLING GENTLY on the flexible connectors.

If a brush is inclined to stick, remove it from its holder and clean the sides with a cloth moistened with carbon tetrachloride. Ensure that the brushes are replaced in their original positions to retain accurate bedding. Badly worn brushes must be replaced and the new ones properly bedded by your INTERNATIONAL HARVESTER dealer.

If the commutator is dirty, remove the starting motor from the engine and clean the commutator in the same manner as described for the generator.

CAUTION: Carbon tetrachloride fumes are highly toxic especially in the proximity of heat. DO NOT smoke when using it and keep the area well ventilated.



1. Brushes
2. Brush spring
3. Yoke
4. Earth terminal
5. Battery terminal
6. Starter terminal
7. Link
8. Solenoid

Illust.76 The Starting Motor - Cover Removed

THE GLOW PLUGS

GENERAL

The glow plugs are provided as an aid to starting. The element being heated to a temperature of 1800°F. When fuel particles strike the element, they vapourise and ignite.

NOTE: Under no circumstances should the glow plug circuit be operated with either the indicator or any of the glow plugs shorted out as this will OVERLOAD the remaining components.

THE GLOW PLUGS

TESTING A FAULTY GLOW PLUG CIRCUIT

1. Ensure that the glow plug circuit is switched on.
2. Using a screwdriver, bridge from the terminal of No.4 glow plug to the cylinder head. If no sparks are observed the indicator is faulty and should be replaced.

NOTE: Remove the paint at the point of contact of the screwdriver to ensure a satisfactory contact.

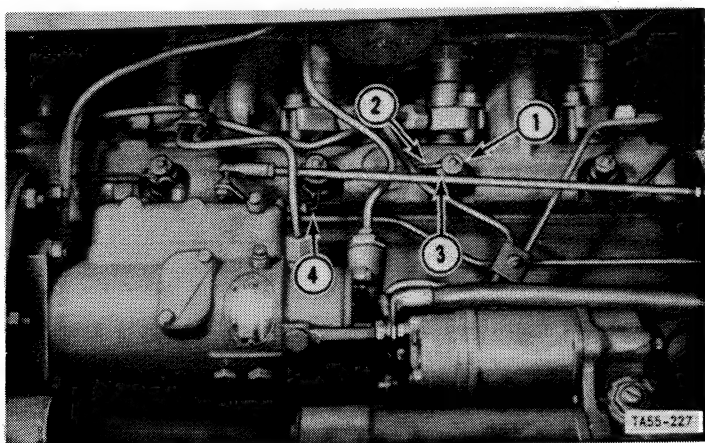
3. Bridge between the cylinder head and the interconnecting wire between No.3 and No.4 glow plugs. If no sparks are observed No.4 glow plug is faulty. Repeat the test on the remaining interconnecting wires to prove No.3 and No.2 glow plugs. If the indicator and the other glow plugs prove satisfactory then No.1 is suspect. Check that the earth strap is making proper contact before finally rejecting No.1 glow plug.

GLOW PLUG INTERCONNECTING WIRES

These wires form the ballast resistance in the two stage glow plug system. ON NO ACCOUNT should copper conductors or "ODD" pieces of wire be used to replace them.

REPLACING A GLOW PLUG

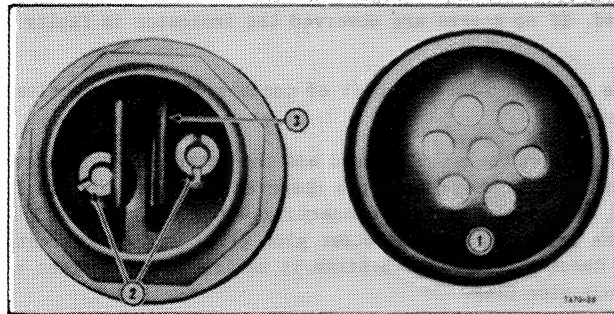
1. Remove the terminal nut (1 Illust.77) and lift off the top interconnecting wire (2 Illust.77).
2. Remove the insulator (3 Illust.77) and lower interconnecting wire (4 Illust.77).
3. Using a suitable box spanner, unscrew the glow plug from the cylinder head.
4. Screw the replacement glow plug into the cylinder head and tighten securely. DO NOT overtighten.



Illust.77 The Glow Plugs

GLOW PLUGS

5. Install the lower interconnecting wire, insulator, upper interconnecting wire and terminal nut. Tighten the terminal nut securely using the screwdriver slot provided.



Illust.78 The Glow Plug Indicator

GLOW PLUG INDICATOR

The indicator performs two functions :-

1. It glows at a similar brightness to the glow plugs, thus giving a visual indication that the circuit is operating.
2. It limits the current in the glow plug elements.

REPLACING THE INDICATOR ELEMENT

1. Remove the window (1 Illust.78).
2. Unscrew the two nuts (2 Illust.78) and slide the element (3 Illust.78) from the posts.
3. Ensure that the replacement element is centrally positioned, that it is clear of all metal parts and that the coils are not touching each other. Tighten the retaining nuts securely and install the window.

PETROL IGNITION SYSTEM

THE DISTRIBUTOR

Every 250 hours of operation lift the rotor arm and apply 2 or 3 drops of oil to the governor weight pivots through the access hole (1 Illust.79) in the support plate.

Every 500 hours of operation inspect the contact breaker points for pitting and wear as follows :-

1. Remove the cap and rotor arm.

PETROL IGNITION SYSTEM

2. Slacken the nut (2 Illust.79) and remove the condenser terminal (3 Illust.79) and the moving point and spring (4 Illust.79).
3. Remove the screw (5 Illust.79) and lift out the adjustable point.
4. Remove the nut (2 Illust.79) to remove the primary lead terminal.
5. Use a slip stone or fine file to clean the points, only removing any high spots. DO NOT use emery cloth.
6. Install the points in reverse order to removal.

SETTING THE POINT GAP

1. Turn the engine until the cam on the distributor shaft opens the points to their widest gap.
2. Slacken the screw (5 Illust.79), insert a .014 inch feeler and adjust the points until the feeler is a snug fit.
3. Tighten the screw.

ADVANCE OR RETARD

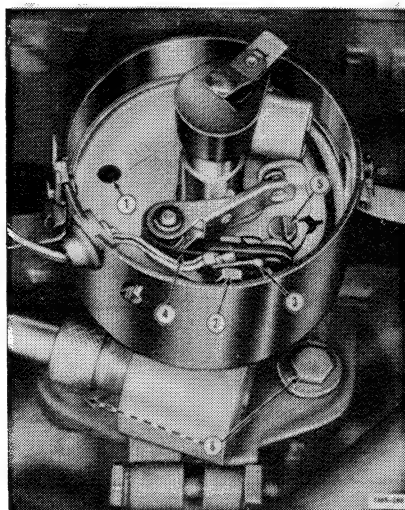
The ignition timing may be advanced or retarded by loosening the mounting bolts (6 Illust.79) and turning the distributor within the limits of the bolt slots. Turning the distributor clockwise will advance the timing, anti-clockwise will retard the timing.

THE SPARK PLUGS

The spark plugs should be removed periodically for servicing. Disconnect the plug lead and with a suitable box spanner unscrew the plug from the cylinder head.

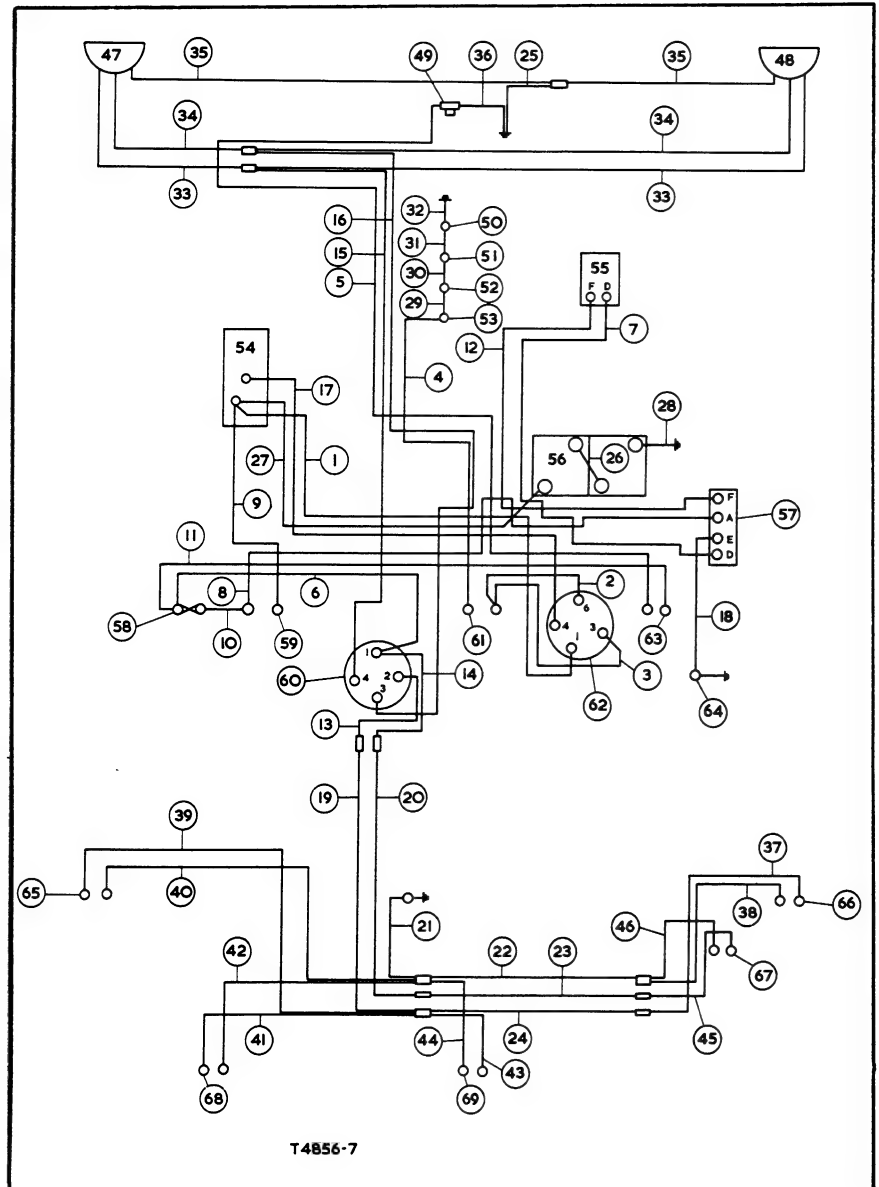
Clean the carbon deposit from the electrodes and set the gap to .024 inch. DO NOT bend the centre electrode.

Install the plugs, ensuring that the copper washers are in place and in good condition and connect the plug leads.



Illust. 79 The Distributor
(cap removed)

DIESEL WIRING DIAGRAM



DIESEL WIRING DIAGRAM

CABLES IN MAIN HARNESS

REF.	COLOUR	TRACER	FROM	TO
1	Brown	Red	Starter Solenoid (+) Term.	Key Switch Term.1
2	Brown	Yellow	Glow Plug Indicator Resistor	Key Switch Term.6
3	Brown		Glow Plug Indicator Resistor	Key Switch Term.3
4	Brown	Black	Glow Plug Indicator Resistor	No.4 Glow Plug
5	Brown	Black	Horn Push	Horn
6	White		Fuse	Light Switch Term.1
7	Yellow		Regulator "D" Term.	Generator "D" Term.
8	Brown	White	Ammeter	Regulator "A" Term.
9	Brown	Green	Ammeter Battery Term.	Starter "B" Term.
10	Brown	Blue	Fuse	Ammeter
11	Brown	Black	Fuse	Horn Push
12	Yellow	Green	Regulator "F" Term.	Generator "F" Term.
13	Red		Rear Main Connector	Light Switch Term.2
14	Red	White	Rear Main Connector	Light Switch Term.1
15	Blue	Yellow	Light Switch Term.4	Head Lamp Connector
16	Blue	White	Light Switch Term.3	Head Lamp Connector
17	Red	Black	Start Coil Term.	Key Switch Term.4
18	Black		Earth	Regulator "E" Term.

CABLES SUPPLIED WITH REAR LIGHTING ATTACHMENT

19	Red		Rear Main Connector	Rear Connectors
20	Green		Rear Main Connector	Rear Connectors
21	Black		Rear Connectors	Earth
22	Black		Rear Connectors	Earth Connector R.H.
23	Green		Rear Connectors	Plough Light Connector
24	Red		Rear Connectors	Side & Tail Light Connector R.H.

CABLES SUPPLIED WITH HEADLAMP ATTACHMENT

25	Black		Lamp Earth Connector	Earth on Horn
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BATTERY CABLES

26	Black PVC	Battery	Battery
27	Black PVC	Battery	Starting motor
28	Tin/Copper	Battery	Earth

DIESEL WIRING DIAGRAM

GLOW PLUG WIRES

REF.	COLOUR	TRACER	FROM	TO
29	Copper Wire		No.4 Glow Plug	No.3 Glow Plug
30	Copper Wire		No.3 Glow Plug	No.2 Glow Plug
31	Copper Wire		No.2 Glow Plug	No.1 Glow Plug
32	Copper Wire		No.1 Glow Plug	Earth

THE FOLLOWING ITEMS ARE SUPPLIED PREWIRED HEAD LAMPS

33	Blue	Yellow	Head Lamp Connector	Head Lamp Dip Filament
34	Blue	White	Head Lamp Connector	Head Lamp Main Filament
35	Black		Lamp Bulb Clamp	Earth Connector

HORN

36	Black		Horn	Earth Horn Bracket
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SIDE AND TAIL LAMPS R.H.

37	Red		Side & Tail Connector R.H.	Side & Tail Light
38	Black		Side & Tail Connector R.H.	Side & Tail Light

SIDE AND TAIL LAMPS L.H.

39	Red		Rear Connector	Side & Tail Light
40	Black		Rear Connector	Side & Tail Light

POWER PLUG

41	Red		Rear Connector	Power Plug
42	Black		Rear Connector	Power Plug

REGISTRATION NUMBER PLATE LIGHT

43	Red		Rear Connector	Number Plate Light
44	Black		Rear Connector	Number Plate Light

PLOUGH LIGHT

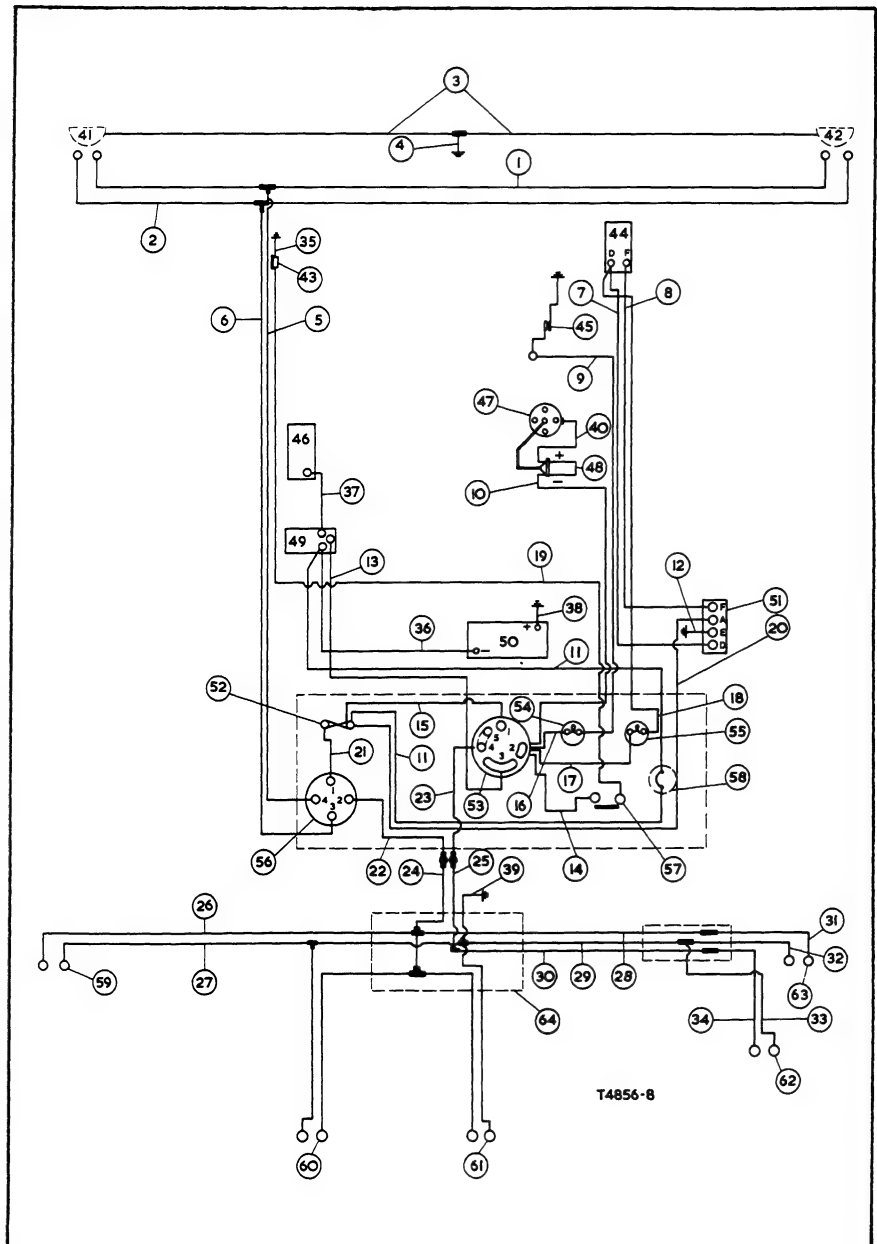
45	Red	White	R.H. Fender Connector	Plough Light
46	Black		R.H. Fender Connector	Plough Light

DIESEL WIRING DIAGRAM

COMPONENTS

47	L.H. Head Lamp	59	Ammeter
48	R.H. Head Lamp	60	Light Switch
49	Horn	61	Glow Plug Indicator
50	No. 1 Glow Plug	62	Switch
51	No. 2 Glow Plug	63	Horn Push
52	No. 3 Glow Plug	64	Earth Stud
53	No. 4 Glow Plug	65	L.H. Side & Tail Light
54	Starting motor	66	R.H. Side & Tail Light
55	Generator	67	Plough Light
56	Battery	68	Power Plug
57	Voltage Regulator	69	Registration Number Plate Light
58	Fuse		

PETROL WIRING DIAGRAM



PETROL WIRING DIAGRAM

CABLES FITTED ON HEAD LAMPS

REF.	COLOUR	TRACER	FROM	TO
1	Blue	Yellow	Light S/W Term.4	Dip Filament
2	Blue	White	Light S/W Term.3	Main Filament
3	Black		Lamp Bulb Clamp	Lamp Earth
4	Black		Lamp Earth	Earth on Chassis

CABLES IN MAIN HARNESS

5	Blue	Yellow	Light S/W Term.4	Dip Filament
6	Blue	White	Light S/W Term.3	Main Filament
7	Yellow		Regulator Term."D"	Generator Term."D"
8	Yellow	Green	Regulator Term. "F"	Generator Term."F"
9	Green	Yellow	Oil Pressure Switch	Oil Press. Warning Light
10	Brown	Green	Ignition S/W Term.2	Coil Term SW
11	Brown		Fuse (via Ammeter when fitted)	Solenoid
12	Black		Regulator Term. "E"	Earth Stud
13	Brown	Red Sleeve	Starter Solenoid Switch	Ignition S/W Term.3
14	Brown	Black	Horn Push	Ignition S/W Term.2
15	Brown	White	Ignition S/W Term.1	Fuse
16	White	Green	Ignition S/W Term.2	Oil Press. Warning Light
17	White	Green	Ignition S/W Term.2	Ignition Warning Light
18	Yellow		Ignition Warning Light	Generator Term."D"
19	Brown	Black	Horn Push	Horn
20	Brown	White	Fuse	Regulator Term. "A"
21	White		Fuse	Lighting Switch Term.1
22	Red		Lighting S/W Term.2	Side & Reg. Light Power Point
23	Red	White	Ignition S/W Term.4	Plough Light

CABLES IN MAIN HARNESS - REAR JUNCTION BOX

24	Red		Lighting S/W Term.2	Side & Reg. Light Power Point
25	Green		Ignition S/W Term.4	Plough Light

CABLES TO NEAR SIDE & REAR LIGHT

26	Red		Lighting S/W Term.2	Near Side & Rear Light
27	Black		Earth	Near Side & Rear Light

PETROL WIRING DIAGRAM

CABLES JUNCTION BOX TO OFF SIDE FENDER SUPPORT

REF.	COLOUR	TRACER	FROM	TO
28	Red		Lighting S/W Term.2	Off Side & Rear Light
29	Black		Earth	Off Side & Plough Light
30	Green		Ignition S/W Term.4	Plough Lamp Connection

CABLES FENDER SUPPORT TO OFF SIDE SIDE & TAIL LIGHT

31	Red		Lighting S/W Term.2	Off Side & Rear Light
32	Black		Earth	Off Side & Rear Light

CABLES FITTED ON PLOUGH LIGHT

33	Black		Earth	Plough Light
34	Red	White	Ignition S/W Term.4	Plough Light

ALTERNATIVE PLOUGH LIGHT ATTACHMENT

Not shown	Red		Ignition S/W Term.4	Plough Light
Not shown	Black		Earth	Plough Light

HORN EARTH CABLE

35	Black		Horn	Earth
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HEAVY DUTY 150 CABLE

36	Black		Battery (-)	Solenoid
37	Black		Solenoid	Starting motor

COPPER EARTH STRAP

38	-		Battery (+)	Earth
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EARTH CABLE

39			Side & Plough Lights	Earth
40	Black		Positive Terminal on coil	Distributor Body

PETROL WIRING DIAGRAM

COMPONENTS

41	L.H. Head Lamp	53	Ignition Starter & Access.Switch
42	R.H. Head Lamp	54	Oil Pressure Warning Light
43	Horn	55	Ignition Warning Light
44	Generator	56	Lighting Switch
45	Oil Pressure Warning Switch	57	Horn Push
46	Starting motor	58	Ammeter
47	Distributor	59	L.H. Side & Tail Light
48	Ignition Coil	60	Power Point
49	Starter Solenoid Switch	61	Registration Light
50	Battery	62	Plough Lamp
51	Voltage Regulator	63	R.H. Side & Tail Light
52	Fuse	64	Junction Box

FAULT TRACING

SYMPTOM	PROBABLE CAUSE	REMEDY
1. ENGINE WILL NOT TURN WHEN STARTING MOTOR IS ENGAGED	(a) Discharged battery (b) Loose or dirty terminal connections (c) Starting motor inoperative	Charge or install new battery. Clean and tighten connections. Check connections.
2. ENGINE TURNS BUT WILL NOT START	(a) Water in fuel (b) Air in fuel (diesel) (c) Fuel starvation (d) Carburettor choked (petrol) (e) Glow plug circuit defective (diesel) (f) Spark plugs defective (petrol) (g) Distributor defective (petrol) (h) Air intake or exhaust restricted (i) Engine oil too heavy for prevailing temperatures (j) Partially discharged battery	Drain system, clean and refill with clean fuel. Vent system (diesel) Vent the fuel system. Check fuel tank. Clean lift pump screen. Blow out fuel lines. Check filters (diesel) Push in choke control and wait a few minutes before attempting another start. Check and service. Check and service. Check and service points. Check point spring. Check condenser. Check distributor cap for cracks and clean contact terminals. Check and clean rotor. Service air cleaner and clean exhaust system. Drain off old oil, flush the system and refill with correct grade oil. Recharge battery.
3. ENGINE DOES NOT DEVELOP FULL POWER OPERATES IRREGULARLY	(a) Restriction in engine air supply (b) Restriction in exhaust (c) Restriction in fuel supply (d) Carburettor partially choked (petrol)	Check air cleaning system. Clean exhaust system. Clean fuel system. Check operation of choke control.

FAULT TRACING

SYMPTOM	PROBABLE CAUSE	REMEDY
SYMPTOM 3 - continued	(e) Distributor point gap incorrect (petrol) (f) Weak point spring (petrol) (g) Spark advanced too far (petrol) (h) Spark plugs fouled (petrol) (i) Engine valves faulty	Check and reset gap. Replace points. Check and reset. Clean and reset gap. Check valve clearance.
4. ENGINE WILL NOT IDLE CORRECTLY	(a) Restriction in fuel delivery (b) Carburettor out of adjustment (petrol) (c) Distributor out of time (petrol) (d) Spark plugs defective (petrol) (e) Sticking valves	Inspect system, clean out fuel lines. Vent system. (diesel) Check adjustment. Check advance and retard mechanism. Check and reset gap. Check valve action.
5. ENGINE OVERHEATS	(a) Insufficient water in cooling system (b) Fan belt slipping (c) Cooling system restricted (d) Radiator core clogged (e) Excessive load (f) Insufficient engine oil	Check coolant level. Adjust or replace fan belt. Clean system. Blow through with air under pressure. Reduce load. Maintain correct oil level.
6. LOW LUBRICATING OIL PRESSURE	(a) Wrong viscosity or diluted oil (b) Low oil level (c) Restricted oil filter	Refer to LUBRICATION GUIDE. Check oil level, add oil if necessary. Replace filter element.
7. EXCESSIVE OIL CONSUMPTION	(a) Incorrect viscosity oil (b) Crankcase breather restricted (c) Engine overheating (d) Leaks in oil lines, filter, crankcase sump plug or gasket	Replace oil with correct viscosity. Service breather. Refer to ENGINE OVERHEATS above. Check and tighten.

FAULT TRACING

SYMPTOM	PROBABLE CAUSE	REMEDY
8. EXCESSIVE FUEL CONSUMPTION	(a) Fuel leaks (b) Restricted air cleaner (c) Engine overloaded (d) Faulty injectors (diesel)	Tighten or replace fuel lines. Service the air cleaner. Reduce load. Check injectors and replace.
9. BATTERY DIS-CHARGED	(a) Generator inoperative	Check drive belt and wiring.
10. BRAKES DO NOT HOLD	(a) Faulty adjustment	Adjust brakes.
11. BRAKES DRAG	(a) Return springs broken (b) Faulty adjustment (c) Tight linkage	Replace springs. Adjust brakes. Free and lubricate linkage.
12. GEARS HARD TO SHIFT	(a) Incorrect oil viscosity (b) Incorrect clutch adjustment	Use correct oil. Refer to LUBRICATION GUIDE. Adjust clutch.

STORING THE TRACTOR

When the tractor is not to be used for a period of time, it must be stored in a dry, protected place. Leaving equipment outdoors, exposed to the elements, will reduce the life of the tractor.

The following procedure must be followed when the tractor is to be placed in storage for more than 30 days.

1. Wash down and thoroughly clean the tractor.

2. Run the engine long enough to warm the oil in the crankcase then drain the crankcase.

3. Change the lubricating oil filter element and refill the crankcase with KEDLESTONE 20 AR engine oil.

4. DIESEL ENGINES ONLY

Drain the fuel tank and change the fuel filter element. Pour two gallons of inhibiting fuel into the fuel tank and vent the fuel system.

5. Run the engine for ten minutes to warm up and circulate the oil.

6. DIESEL ENGINES ONLY

Stop the engine, remove the air cleaner connections from the manifold and spray "SHELL ENSIS" SAE-20 engine oil into the manifold while the engine is being cranked over on the starting motor.

6. PETROL ENGINES ONLY

Disconnect the air cleaner hose at the carburettor and set the engine idle at 700 rev/min. Spray "SHELL ENSIS" SAE-20 engine oil into the carburettor until the engine stalls. Continue to apply "SHELL ENSIS" for a further 5 seconds while the engine is being cranked over on the starting motor. Refit the air cleaner hose.

7. Plug the exhaust outlet and air inlet. Remove the crankcase breather/filler cap and spray "SHELL ENSIS" into the valve housing cover for 5 seconds. Plug the opening.

8. Drain excess fuel from the tank.

9. Drain the entire cooling system and install a "RADIATOR DRAINED" tag. Close the drain tap.

10. Remove the battery and store in a cool, dry place, above freezing point 0°C (+32°F). The battery must be fully charged at the time of storage; check the battery at least once a month for electrolyte level and specific gravity. The battery must never be allowed to run down below 3/4 full charge, while in storage.

11. Remove the tractor weight from the tyres by jacking up the tractor and placing wooden blocks under the appropriate jacking up positions.

STARTING THE ENGINE AFTER STORAGE

1. Remove the valve housing cover and flush the valves and valve mechanism with a mixture of one half kerosene and one half grade 10W oil. Replace the valve housing cover making sure that the gasket is in good condition and in the correct position.

2. Drain the crankcase and oil filter and fill with the specified lubricant. Refer to the LUBRICATION GUIDE.

3. Be sure that the lubricating filter has a new element before starting the engine.

4. Clean the air cleaner and refill the oil cup.

5. Remove the plugs from the air cleaner and exhaust pipe and replace the pre-cleaner.

6. Refill the cooling system and remove the "RADIATOR DRAINED" tag; check for leaks and loose connections.

7. Fill the fuel tank with clean fuel.

8. Install a fully charged battery and be sure that the proper connections are made.

CAUTION: KEEP DOORS AND WINDOWS OPEN OR MOVE THE TRACTOR OUTSIDE THE STORAGE ROOM TO AVOID DANGER FROM EXHAUST FUMES.

9. Start the engine and run at low speed. If the diesel engine is misfiring or loss of power is evident, vent the fuel system.

ATTACHMENTS

GENERAL

The tractor is used for so many different types of work under such varying conditions, that a considerable variety of special equipment is required to adapt it to the users' requirements. By making this equipment available as attachments, the tractor can be purchased by the user in a form most suited to his requirements.

Below is a list of attachments, however, these MUST NOT be ordered from this manual but through an INTERNATIONAL HARVESTER dealer, quoting the tractor and engine serial numbers.

REGULAR TRANSMISSION P.T.O.	SELF SEALING COUPLINGS
SINGLE SPEED CONSTANT RUNNING P.T.O.	SINGLE AND DOUBLE ACTING AUXILIARY VALVES
DUAL SPEED CONSTANT RUNNING P.T.O.	THREE POINT LINKAGE
P.T.O. SAFETY CAP	THREE POINT LINKAGE DRAWBAR
BELT PULLEY P.T.O.	SWINGING DRAWBAR
FRONT P.T.O. PULLEY	ADJUSTABLE HEIGHT SWINGING DRAWBAR
FULL FORWARD AND REVERSE TRANSMISSION	ADJUSTABLE CHECK LINK
MOWER DRIVE	CHECK CHAINS
STANDARD HYDRAULIC LIFT	AUTOMATIC HITCH (Regular tractor only)
VARY-TOUCH HYDRAULIC LIFT	

ATTACHMENTS

FRONT WHEEL FENDERS	INCREASED CAPACITY RADIATOR
REAR WHEEL INDUSTRIAL FENDERS	SPARK ARRESTER (Petrol only)
REAR WHEEL SPACERS	STARTER CUT-OUT SWITCH
DUAL REAR WHEELS (11x28 tyres only)	CLUTCH OPERATED SAFETY SWITCH
POWER ADJUSTED REAR WHEELS	COLD STARTING DEVICE
GLASS BOWL WATER TRAP	HAND OPERATED DRUM BRAKES
AGGLOMERATOR FUEL FILTER	FOAM RUBBER SEAT
TWIN FUEL FILTERS	BOSTROM SUSPENSION SEAT (Vary-Touch only)
ENGINE HEAT INDICATOR	FRITZMIER SUSPENSION SEAT (Vary-Touch only)
TRACTORMETER	DOWNSWEEP EXHAUST (Standard on petrol)
SERVICEMETER (Diesel only)	UPSWEPT EXHAUST (Standard on diesel)
AMMETER	HEAD AND PLOUGH LAMPS
RADIATOR CURTAIN	SIDE, HEAD AND REAR LAMPS
FOOT ACCELERATOR	ROAD TRAFFIC REGULATION LIGHTING
HEAVY DUTY SINGLE CLUTCH	REGISTRATION NUMBER PLATE
FAN BELT ADJUSTING PULLEY	DRIVING MIRROR
UNDERHOOD AIR CLEANER	

WHEEL WEIGHTS

	WHEEL SIZE	NO. OF SETS	WEIGHT (Per Set)
FRONT	4.00 - 19	3	98 lb (44.48 kg)
	5.50 - 16	2	90 lb (40.8 kg)
REAR	ALL	2	200 lb (90.8 kg)
	ALL	5	200 lb (90.8 kg)
FRONT END WEIGHT		160 lbs	

OPTIONAL TYRE EQUIPMENT

	FRONT	REAR
REGULAR	5.50 - 16 4 ply	10.28 6 ply
	5.50 - 16 6 ply	11.28 4 ply
		11.28 6 ply
		12.28 4 ply
HI-CLEAR	5.50 - 16 4 ply	10.38 4 ply
	5.50 - 16 6 ply	
	6.00 - 16 4 ply	
	6.00 - 16 6 ply	

CASE TECHNICAL MANUALS

Manuals are available from your Dealer for the operation, service and repair of your machine. For prompt convenient service, contact your Dealer for assistance in obtaining the manuals for your machine.

Your Dealer can expedite your order for operators manuals, parts catalogs, service manuals and maintenance records.

Always give the Machine Name, Model and P.I.N. (product identification number) or S.N. (serial number) or your machine so your Dealer can provide the correct manuals for your machine.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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